GUIDELINES FOR THE DEVELOPMENT OF RESOURCE MANAGEMENT PLANS
SKEENA BULKLEY REGION
2002/03 PLANNING YEAR

LEAD AGENCIES

- Ministry of Forests (Joint Leadership)
- Ministry of Environment (Joint Leadership)
- Forest Renewal BC (Advisory)

CRITICAL DATES

April 23, 2001	Set ground rules and establish criteria
April 23, 2001	RMP process begins
June 5, 2001	Status Reports (one pager) “Where is the RMP at?
June 30, 2001	Draft RMP to participants and invited stakeholders for review
July 31, 2001	Final comments on draft to local MoF co-ordinator
September 17-21, 2001	Information sessions in Districts
SEPTEMBER 28TH	**Final RMP**

FOREST RENEWAL BC INVESTMENT PLANNING PROCESS

Includes: 1) **Resource Management Planning** and

2) **Regional Investment Planning**

- The **Resource Management Planning** process is generally characterised as the technical, return on investment or priority setting portion of the investment plan.

- The **Regional Investment Planning** process is generally characterised as the choice of investments based on social, or equity principles (funding distributions, partnership involvement, First Nation participation levels, etc.) as well as resource priorities.

  The overall target of the Investment Planning process is to:

  1. Ensure the best possible return on investment, meeting the Corporate Strategic Investments;
  2. Provide a balanced spatial and temporal distribution of investments to support the Corporate Strategic Investments and principles;
  3. Enable Forest Renewal BC's partner groups to participate in the investment planning process;
  4. Produce a schedule of investments over five years as input into the development of the Corporate Business Plan, and;
  5. Achieve and record appropriate performance measures where and when available as a gauge of achievement of Corporate Strategic Objectives.

FOREST RENEWAL BC'S STRATEGIC OBJECTIVES

Forest Renewal BC investments must reflect the objectives provided in the five- year strategic plan (Strategic Plan 1999-2003). The strategic objectives fall under the following seven headings:

1. **Sustainable Harvest**
2. **Enhance Environmental Values**
3. **Strengthen Sustainable Forest Management (Enhance Knowledge)**
4. **Strengthen and Expand the Value Added Sector**
5. **Support Forest Workers Through Transition**
6. **Support Forest Communities Experiencing Major Job Loss**
7. **Increase Forest Renewal BC's Effectiveness and Efficiency.**

Although the Forests and Environment Investment Group activities touch on all of these objectives, its main focus is the first three strategic objectives. Each of the strategic objectives (summary definitions below) has a key target and a number of business areas though which the overall objective is achieved:

1. **Sustainable Harvest** – *Forest Renewal BC will invest in the production of faster growing, higher quality stands of second growth timber on lands available for timber production.*

   a) Programs to put more land into timber production (Backlog Reforestation);

   b) Programs to maximise the volume, value, and health of second growth forests (Enhanced Forestry);

   c) Programs which support the application of forest level plans in silviculture decision making (models, tools and research).

   Key Target: ***By March 31, 2004, Forest Renewal investments in sustainable harvest will increase the timber available for potential future harvest by 25 million cubic metres.***

   Regional Target:

   1. *For the planning period 1999-2004 Skeena Bulkley Regional investments in sustainable harvest will increase the timber available for harvest by 1.7 million cubic metres (excluding gains from the Tree Improvement Program).*
   2. *The economic value of timber on all enhanced forestry treatment areas in the Skeena Bulkley Region will be increased by 5 to 30 per cent.*

2. **Enhance Environment Values** - *Forest Renewal BC will invest in restoring forest watersheds and in promoting environmental stewardship and strong environmental values in B.C.'s forests.*

   a) Programs which restore watersheds which have been damaged or threatened by past forest harvesting (Watershed Restoration). Key watersheds targeted (highest priority) will be those with high fisheries values or those that provide community water supplies and which have a high likelihood of restoration success.

   Key Target: ***By March 31, 2004, Forest Renewal BC will work with its partners to complete the restoration of 20 per cent of the highest priority watersheds that have been damaged or seriously threatened by past forest development activities.***

Regional Target:

1. *Over the period of 1999 - 2004, Forest Renewal BC will work with its partners to complete the restoration of 20 per cent of the highest priority watersheds that have been damaged or seriously threatened by past forest development activities in the Skeena Bulkley Region. The region is targeting completion of 40 priority watersheds. Restoration plans will be in place by October 31, 2001*

3. **Strengthen Sustainable Forest Management (Enhance Knowledge)** – *Forest Renewal BC will invest in the development of relevant, usable, timely information and tools keyed to achieving sustainable forest management.*

   a) Programs that identify and develop the information and tools needed to create better strategic resource plans and make better strategic decisions (e.g. strategic inventories, research and CLUPE);

   b) Innovative Forest Practices Agreements and Enhanced Forest Management Pilot Projects—Although not specifically addressed in the Strategic Plan, these programs work toward the development of relevant, usable, and timely information and tools in achieving Sustainable Forest Management. These programs also have activities that fall within the other two Strategic Objectives. These programs will be dealt with in the Investment Planning Process as programs separate from the others identified (BL, EFP, WRP, OIP).

Key Target: ***By March 31, 2004, Forest Renewal BC will work with its partners to identify and address key gaps in knowledge for sustainable forest management.***

Regional Target:

Over the period of 1999 - 2004, Forest Renewal BC will work with its partners to identify and address key gaps in knowledge important to progressing toward sustainable forest management in the Skeena Bulkley Region.

INVESTMENT PLANNING PRINCIPLES

1. Highest priorities for investment are business areas, programs and activities based on the potential contribution toward achieving a Corporate Strategic Objective at reasonable cost;

2. The planning process must be transparent; major stakeholder groups must have the opportunity to participate in the Forest and Environment Investment Planning Process;

3. The proportion of total funding and employment managed through partnership arrangements is to be maintained at current levels;

4. Forest Renewal BC's stakeholders must understand, in advance, the investment planning process and their opportunity for input into that process. Where stakeholders play a direct role in setting resource and environmental management priorities they will have the opportunity to participate in the technical resource management planning process. This process is carried out on Forest Renewal BC's behalf by the Ministry of Forests and the Ministry of Environment, Lands and Parks.

5. Planning process outputs will be determined as program-level investment strategies.
   a) Individual land-based investments must be explained and defended in terms of their potential for return on investment and value-for-dollar, and;
   b) The total annual employment created through investments is expected to be proportional to that created in previous years.

Regional Investment Targets

Recognising that adjustments may be made by HQ allocations to regions and that the investment and resource management planning processes may lead to adjustments, the following are intended to provide broad program targets (as starting points) for planners to work from in the Skeena Bulkley Region. Resource management plans should prioritise work beyond these levels, to approximately 130-150% of these targets presuming sufficient high priority work is available by program and planning unit.

Strat. Obj.	**SH**	**SH**	**EEV**	**SSFM**	**Total**
Program	**EF**	**BL**			
Plan. Unit	($000)	($000)	($000)	($000)	($000)
Bulkley	335	485	300	375	1495
Kalum	2000	1200	1285	1000	5485
Kispiox	50	990	347	400	1787
Lakes	400	500	500	970	2370
Morice	785	786	786	785	3142
N. Coast	323	260	275	558	1416
Region	0	0	0	500	500
Total	3893	4220	3493	4588	16195

FOREST RENEWAL BC FUNDED ACTIVITIES

Assuming eligibility requirements are met, an activity must directly contribute to at least one of the above strategic objectives in order to be funded by Forest Renewal BC.

The extent to which it contributes to the strategic objectives and corporate commitments will determine its priority within the Regional Investment Plan. The Resource Management Plans determine the priority of investment opportunities as they apply to the strategic objectives. Investment Planning Guidelines provide priority and direction for the Corporate commitments.

The four Corporate commitments are:

- **Regional equity**
- **First Nations participation**
- **New or ongoing partnership development**
- **Employment creation**

THE RESOURCE MANAGEMENT PLANNING PROCESS

Resource Management Plans (RMP's) are **synopsis of technical resource and environmental management priorities and opportunities** as prepared by the Ministry of Forests and the Ministry of Environment, Lands and Parks. The RMP's are developed in consultation with Forest Renewal BC's agreement holders and other directly relevant stakeholders. The Ministries will co-operate to deliver integrated regional RMP's based on Forest Renewal BC's administrative boundaries.

RMP GROUND RULES

In order to assure adequate understanding between the Ministries and Forest Renewal BC, a set of **ground rules** or **objectives** have been determined. The ground rules set the stage for RMP development, are set by Forest Renewal BC in consultation with the Ministries and are used as a **benchmark** against which the RMP's will be evaluated. The following have been established as ground rules between the Ministry of Forests and the Ministry of Environment, Lands and Parks, and Forest Renewal BC, in the Skeena Bulkley Region:

A. SUSTAINABLE HARVEST

1. Geographic Units

District is basis for planning; objectives and strategies by rolled up (if multiple) by TSA's and by TFL as distinct units. The Cassiar TSA will be incorporated into the Bulkley TSA. District plans will be collated into a regional plan.

2. Roles and Responsibilities

a. **Lead**:

The Ministry of Forests will lead the SH RMP process. Paul Perkins is the FRBC contact.

The Ministry of Environment will take a relatively small part in the Habitat Supply and Biodiversity component of Enhanced Forestry. This will happen regionally through identification of knowledge gaps and data compilation/analysis needs with the goal of providing environmental indicators and prescriptions for application at the Management Unit Level. More detailed input will be available for the IFPA planning areas with more site specific projects. MoELP input will be from Regional habitat protection staff, district FESs where and when available (minor) and a biologist working with the IFPA group.

Licensees have direct input, existing proponents' input accepted for consideration where put forward or requested. Other stakeholders' input into silvicultural development is and continues to be through LRMP process, which drives objectives. Representatives from Resource Management Committees, Steering Committees, or SLUP may be invited as locally determined. Licensees will lead on TFL's. Current RMP's will be used as a starting point; participant input will be sought and adjustments made to existing plans for this planning year. Substantive agreement is sought on the objectives and strategies by geographic unit, as well as the list of opportunities developed.

b. **Steering Committee**:

The Steering Committee is composed of: Neil Endacott (MoF), Don Reid (MoELP) and Paul Perkins (FRBC).

The Steering Committee will:

- co-ordinate communication;
- filter out issues;
- deal with conflict resolution;
- ensure consistency of format and content.

c. **Participation and Attendance**:

- Ministry leading the process (MoF) will request participation of stakeholders (licensees, others – as defined above) with timelines appropriate to the reasonable completion of the RMP's.
- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report (per attached Matrix) and final RMP.

d. **Consultation**:

- See also lead roles
- In a process run by the Steering Committee, local planning units will derive a list of participants.
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. **Feedback**:

- The draft RMP will be fed back to the participants (**by June 30th**)
- Participants to respond back with final comments (**by July 31st**)

f. **Consultation Reports**:

- A summary of participant consultation will be provided to Forest Renewal by the Ministries in conjunction with the submission of the RMP. The summary may be provided on the attached participant matrix.

3. Forest Renewal BC Input

a. Performance Targets

- Will be at a Regional level

b. Investment Level Estimates

- Will be at a Planning Unit level

c. Participation in process

- Will commit to having a person available in an advisory role (Paul Perkins)

4. Process for RMP Development

4.1 RMP Content

a. Per Guidelines

- Criteria, strategies, objectives, and ground rules to be established by MoF/Licensees
- Opportunities within the strategies to be identified jointly by participants
- Objectives and opportunities to be ranked (prioritised) where possible

b. Research

- Significant issues requiring further study are to be identified for referral to the research process.
- Issues will be identified as operational (operational trials) or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. Outcomes and Performance Measures

- will be included in the new structure, as per the new guidelines (Tab 8, pg. 26 – Performance Measures table)

d. Cost Estimates

- required as per tables
- to be included by opportunity identified
- cost trend activities

4.2 RMP Format

- each unit of the SH component of the RMP will be of consistent format
- by Planning Unit
- collated into the SH component of the Regional RMP
- format will address all the requirements of the RMP guidelines
- Table of Contents to be supplied to each unit to be followed to ensure consistent format

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

  - Ground rules established by participants prior to plan establishment
  - Substantive agreement desired on objectives and strategies
  - Priorities must fit with established objectives and strategies
  - RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Ranking of priorities and opportunities will be tied directly to objectives and strategies plan. Main stakeholders develop objectives and strategies using RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final **RMP's** will be **THE** Source Document for FRBC investments. **The highest priorities and value opportunities identified will be selected for investment.**

B. ENHANCING ENVIRONMENTAL VALUES

1. Geographic Units

The existing RMP will form the foundation for the current RMP development. The Ministry of Forests and the Ministry of Environment, Lands, and Parks will determine the operational watershed units (whole watershed level, landscape level, etc.) for planning purposes. MoELP will lead in the identification of key watersheds (high water/fish values) at the regional level. The key units will be used as prioritisation units at the district level for establishment of priority key watersheds (categories I-VI). In aggregate, the work, including tables, maps and introductions will form the WRP portion of the regional RMP. 20% of the priority key watersheds will be targeted for completion. FRBC will lead the latter process as part of the Regional Investment Planning process.

2. Roles and Responsibilities

a. Lead:

MELP will be the lead and will establish and identify key watersheds, and with MoF, jointly submit the plan following consultation with the EEV Steering Committee. Details of the work to be implemented (i.e. at the activity level) will be identified at the workplan stage in conjunction with FRBC workplan development. One of the main functions of the RMP is to identify the priority key watersheds to be worked on. MYA holders are directly involved in Step six of the Attachment A of Appendix II of the RMP guidelines. The DFO will also be invited to provide input as to fish habitat priorities. These participants provide information that would be specifically applicable to the RMP development. Those who have technical input for the RMP will be asked to participate in the development of specific parts of the RMP (i.e. establishing priority key watersheds).

b. Steering Committee:

Members:

- MELP: Jeff Lough (Lead)
- MoF: Howard DeBeck
- FRBC: Bob Purdon
- DFO ??

The Steering Committee will:

- co-ordinate communication;
- filter out issues;
- deal with conflict resolution;
- ensure consistency of format and content.

c. **Participation and Attendance:**

- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report (per attached Matrix) and final RMP.

d. **Consultation:**

- See also lead roles
- In a process run by the EEV Regional Steering Committee, local planning units will derive a list of participants.
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. **Feedback:**

- The draft RMP will be provided to the participants for comment (**by June 30th**)
- Participants to respond back to MoELP Regional WRP Specialist with final comments (**by July 31st**)

f. **Consultation Reports:**

- The attached Matrix will be provided by the ministries as a summary to partner consultation for the purpose of tracking participation and responses

3. Forest Renewal BC Input

a. **Performance Targets**

- Will be at a Regional level

b. **Investment Level Estimates**

- Will be at a Planning Unit level

c. **Participation in process**

- Will commit to having a person available in an advisory role (Bob Purdon)

4. Process for RMP Development

4.1 RMP Content

a. Per Guidelines

- Steps 1-5 of Guidelines Attachment A of Appendix II
  - Review existing RMP for consistency with current guidelines; make necessary changes
  - Regional identification of key watersheds (watershed atlas)
  - Establish key watersheds(H, VH fish and water quality values)

- Step 6 of Attachment A of Appendix II
  - District consultation with stakeholders
  - Determine Priority Key Watersheds (Category I, II, III, IV, V, VI)

These make up the RMP. Details of the activities within priority watersheds are to be developed at the work plan stage.

b. Research

- Significant issues requiring further study are to be identified for referral to the research process.
- Issues will be identified as operational (operational trials) or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. Cost Estimates

- leave past costs in, pending further discussion
- no future cost estimates

4.2 RMP Format

- The WRP section of the RMP will consist of 3 sections:
  - i) RMP description including introduction, description, methods, and objectives
  - ii) Watershed tables (Tables 3(a) and 3(b))
  - iii) Watershed atlas (maps)
- There will be one WRP section for the RMP for the Region
- Format will address all the requirements of the RMP guidelines
- Table of Contents to be developed to ensure consistent format

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Determination and ranking of priority key watersheds will be tied directly to RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final RMP's will be the source document for the determination of watersheds to be targeted for completion using FRBC investments. The highest priorities and best opportunity for restoration success identified will be selected for investment.

C. STRENGTHEN SUSTAINABLE FOREST MANAGEMENT

1. Geographic Units

Regional priority issues identified by a regional planning team, with input from the districts on local priority issues, strategies and project recommendations. Knowledge strategies developed in regional framework at management unit level. Management units for this component are Forest Districts. Cassiar will be treated as a separate management unit from Bulkley.

2. Roles and Responsibilities

a. **Lead**:

MoF and MELP will assume a joint lead role in development of RMP. RMP Steering Committee is composed of Greg Rawling (MoF), Troy Larden (MELP) and Butch Morningstar (FRBC). Contacts for the SSFM component are: Ruth Edwards (MoF), Don Reid (MELP) and Paul Perkins (FRBC). A contract facilitator will be hired to co-ordinate the activities of the Regional Strategic and Regional Planning Teams. A contract facilitator will also be hired to co-ordinate input of the District Planning Committees. Level of contribution to and award of the contract to be determined by the RMP Steering Committee.

b. **Regional Planning Teams**

- The regional planning teams will consist of 1)a Regional Strategic Team composed of senior members of MoF (RM, FSIM), MELP (RD, FRP Coordinator); FRBC (RD); LUCO (IAMC co-ordinator) and two industry representatives and 2) a Regional Planning team composed of technical experts from MoF, MELP and industry.
- The RMP Steering Committee will reconvene and assemble the Regional Strategic and Planning Teams. Recommended first meeting of the Regional Planning team is May 3, 2001.
-
- Regional Strategic Team will:
    - provide regional vision and strategic direction
    - reconfirm key regional strategic issues
    - The Regional Strategic Team will provide direction as necessary and review final RMP documents
- The Regional Planning Team will:
    - Provide technical direction and framework for the RMP;
    - Ensure framework is provided per steps 2-5 of section 4.1a. (RMP content);
    - Provide advice and guidance to the RST where needed;
    - Assist district planning teams in completing knowledge strategies

- Provide direction for facilitator to compile draft and final RMPs

c. **Participation and Attendance**:

- Ministries leading the process will request participation of stakeholders with timelines appropriate to the reasonable completion of the RMP's.
- Industry representatives are encouraged to participate at the RST and RPT levels, however, it is expected that most participation will be at the district or management unit level.
- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report (per attached Matrix) and final RMP.

Consultation

- See also lead roles
- The Ministry of Forests Districts will make recommendations for the establishment of local planning teams;
- Local planning teams will consist of those stakeholders with available technical expertise to contribute to construction of the RMP. Generally, the teams will be similar to previous years but also include as a minimum:
  - Forest Ecosystem Specialists (MELP - all districts)
  - The Wetsuete'en (Lakes, Morice, Bulkley)
  - IFPA (Lakes, Morice)
  - Lakes Community Forest (Lakes)
  - Kitsumkalum (Kalum)
  - Nisga'a (Kalum)
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. **Feedback**:

- The draft RMP will be fed back to the participants (**by June 30th**)
- Participants to respond back with final comments (**by July 31st**)
- Subject to further discussion and agreement between the agencies, the RMP will be presented for information purposes to a broader group of stakeholders in September, 2001.

f. **Consultation Reports**:

- Matrix to track participation and responses (attached)
- The agencies will provide a report on consultation and meetings including as a minimum, when meetings/consultations were held, the subject matter of the meeting/consultation, who attended, who declined to attend, the date and time of the meeting/consultation. The matrix noted above may be used or another, mutually acceptable format may be substituted.

3. Forest Renewal BC Input

- **Performance Targets**: Will be at a Regional level
- **Investment Level Estimates**: Will be at a Planning Unit level
- **Participation in process:** Will commit to having a person available in an advisory role

4. Process for RMP Development

4.1 RMP Content

a. **Per Guidelines**

- The guidelines (March 2001) will outline the required content of the RMP, including tables.
- Opportunities within the strategies to be identified jointly by participants at a management unit (district) level, within the regional framework (see below steps);
- Objectives and opportunities to be ranked (prioritised) where possible
- The following steps are the agreed upon process for identifying investment strategies and knowledge gaps recommended to FRBC for funding. These steps will identify integrated projects and opportunities to address key priority issues in a regional framework, with local significance;

1) The RMP steering committee will reconvene the Regional Planning Team and the Regional Strategic Team and hire a facilitator to co-ordinate the progress of the SSFM section of the RMP;
2) RPT and RST to confirm or adjust regional priority issues
3) RPT to synthesize the functional relationships within issues;
4) Redefine the knowledge strategies for regional priority issues so that gaps may be identified and filled in a logical sequence (per the functional relationships), use existing management unit projects and add others as necessary. RPT
5) Facilitator and RPT reps to work with district planning teams for local understanding of strategic approaches (step 4) to knowledge strategies. Districts need to understand and buy into functional relationship approach

to priority issues strategies and define and recommend management unit (district) strategies for investment. These strategies should fit within current budget levels and must integrate with regional knowledge strategies at the management unit level. Within this framework, projects would be prioritized within the strategies for the defined term of the RMP.

6) District planning teams must provide rationale for any off strategy (step 5) investment recommendations. These rationale must demonstrate how proposed deviations meet an integrated district or regional SFM plan.

b. **Research**

- Significant issues requiring further study are to be identified for referred to the research process.
- Issues will be identified as operational or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. **Outcomes and Performance Measures**

- If required, will be agreed upon by the RMP steering committee in consultation with the Regional Strategic Team

4.2 RMP Format

- As per guidelines (currently available)
- A contractor will be hired by MoF to assemble the RMP in the required, consistent format.

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Ranking of priorities and opportunities will be tied directly to objectives and strategies plan. Main stakeholders develop objectives and strategies using RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final RMP's will be THE Source Document for FRBC investments. The highest priorities and value opportunities identified will be selected for investment.

MINISTRY OF FORESTS

RESOURCE MANAGEMENT PLAN

2002-06

SKEENA-BULKLEY REGION

title supplied by cataloguer

1.0 RMP: OVERALL SUMMARY

1.1 "Strategy at a Glance"

1.1.1 Overview

The Resource Management Plan (RMP) addresses land-based activities from the perspective of biological needs and forest resource management priorities. The plan forms a compendium of priorities determined by the Ministry of Forests (MoF), the Ministry of Environment, Lands and Parks (MELP), major licensees, woodlot licensees and other stakeholders. The RMP is designed to provide guidance to Forest Renewal BC (FRBC) and other agencies to determine the best activities for investments, regardless of the funding source or the agency actually completing the work.

1.1.2 General Strategy

The Resource Management Plan for the Prince Rupert Forest Region (PRFR) examines land-based resource needs and priorities in terms of:

- Commitments, recommendations and links to other land and resource management plans.
- The long-term resource implications of current investments.
- The value, risks and benefits of the various activities and treatments.
- The necessary timelines to meet defined resource management objectives.
- Delivery recommendations, viable options and consequences of not carrying out the activity.
- Consistency within programs and between delivery centres.
- Providing resource investment recommendations consistent with FRBC investment principles and ground rules.

1.1.3 Sustainable Harvest - SH

The objectives of the SH program include:

- increasing the volume, economic value and health of second-growth forests;
- maintaining or enhancing habitat supply and long-term biodiversity of second-growth forests;
- increasing the amount of land available for commercial timber production; and
- supporting more-informed silviculture investment decisions.

Sustainable Harvest strategies are associated with several key program initiatives. Enhanced Forestry includes stand tending, forest health enhancements, biodiversity maintenance, and habitat enhancements. Backlog Reforestation consists of surveys; site preparation; planting, brushing and density spacing. Forest Health Maintenance/Current Reforestation activities are associated with areas that require a free growing stand to be established that was damaged by fire and pests and has no tenure established.

The Management Units involved in the Sustainable Harvest component of the RMP are the Forest Districts of the PRFR. These are the Lakes, Morice, Bulkley-Cassiar, Kispiox, Kalum and North Coast Forest Districts. The Lakes and Morice Forest District each have one Timber Supply Area (TSA). The Bulkley-Cassiar and Kispiox Forest Districts each contain two TSAs. The Kalum and North Coast Forest Districts each contain one TSA as well as Tree Farm Licences (TFL). TFL 1 and TFL 41 are in the Kalum Forest District and part of TFL 25 is in the North Coast Forest District.

1.1.4 Enhancing Environmental Values - EEV

The Watershed Restoration Program (WRP) was introduced in 1994 as a part of the newly formed Crown Corporation, Forest Renewal British Columbia. The purpose of the WRP was:

- to restore, maintain and protect fisheries, aquatic and forest resources that have been adversely affected by past forest harvesting practices.
- to provide community based training, employment, and stewardship opportunities; and
- to provide a mechanism to bridge historical forest harvesting practices and the (then) new standards established by the Forest Practices Code.

As part of the strategic planning exercise undertaken by FRBC, the focus of the WRP was further refined outlining the program's more focused priorities. ***The program will focus on restoring and protecting fish habitat and domestic water supply in priority watersheds.*** FRBC will continue to fund activities, be they upslope, in-stream or riparian, that are required to restore and protect fish habitat and domestic water supply.

A wide variety of hydrological and terrain conditions are present across the Skeena-Bulkley/Prince Rupert Forest Region. The North Coast contains steep rocky terrain where runoff is dominated by rainfall events. Rain-on-snow events provide the largest run-off events in the deep-seated tills on moderate to steep slopes in the Kalum and Kispiox districts. Moving east to the Bulkley, Morice and Lakes districts, one finds rolling interior plateau topography with highly erodable soils and snowmelt provides the dominate runoff events. Some of the restorative opportunities in the Lakes Forest District lie within the headwater drainages of the Fraser River Watershed.

The aquatic resources of the region are rich and diverse. Major watershed in the Skeena-Bulkley Region include the Skeena River watershed and the Nass River watershed, the second and third largest watersheds in the province, respectively. The watersheds in the region support five species of Pacific salmon (chinook, sockeye, chum, coho and pink) as well as anadromous populations of rainbow trout (steelhead), cutthroat trout and eulachon. Resident populations of rainbow trout, cuthroat trout, bull trout, Dolly Varden and kokanee also abound throughout the region. In addition, many populations of many other non salmonid species round out an extremely diverse and unique fisheries resource. Regional water quality priorities primarily lie within the community watersheds. Domestic water use is prevalent in the rural and urbanized areas in the Upper Fraser and Lower Skeena Watersheds which are also an important component of the region's resource priorities.

1.1.5 Strengthening Sustainable Forest Management - SSFM

The objective of this component of the RMP is to identify the opportunities for Forest Renewal investment that support existing or proposed resource planning initiatives. These investments must be consistent with the Canadian Council of Forest Ministers' definition of sustainable forest management. The RMP makes recommendations to invest in those information and decision analysis tools in order to mitigate the greatest risks to the resources, the people and communities as determined at the local and regional level. The RMP for SSFM applies to all timber supply areas and TFLs within the boundaries of the Prince Rupert Forest Region.

History of the process

In 2000, the Ministries of Forests and Environment and industry stakeholders, with the support of Forest Renewal B.C, established working groups throughout the Prince Rupert Forest region. From mid-May through to mid-September 2000, a Regional Planning Team (RPT) and each of the District Planning Teams (DPTs) collaborated to determine the priority issues and knowledge gaps across the region. Each planning team then proposed knowledge strategies and projects to work towards better support existing strategic land use planning, timber supply, operational planning and resource management practices and processes.

Eleven priority issues out of the 40 regionally identified issues were agreed to by the RPT and confirmed by The Regional Strategic Team (RST), a group of senior managers from Industry and agencies. The majority of district issues matched strongly to the 11 priority regional issues, confirming that districts (including licensees) and the region have largely the same areas of concern. The issues are as follows:

High Priority Regional Issues
1.21 How do we ensure the LUs retain appropriate attributes represented in riparian, OGMAs, FENs, sensitive areas?
1.23 How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat?
1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?
1.33 How can we access exiting information and technology transfer to share information resources as broadly as possible at reasonable cost?
2.11 What is the productivity of managed stands in the different ecosystems of the PRFR?
2.12 How productive are managed stands using partial cutting silvicultural systems in the different ecosystems of the PRFR?
2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?
3.11 How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity?
3.12 What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base?
3.13 What are the best management practices around unclassified streams based on existing stream inventory information?

High Priority Regional Issues
5.11 How do we increase the participation of First Nations in the local forest sector economy?

Current Process

In April to May 2001 the Regional Planning team was reinstated for the 2002-2006 RMP development. The RPT reconfirmed with the RST that the issues identified in 2000 were still relevant. RPT members completed standard provincial templates on each of the regional issues and created knowledge strategies to best address these issues. District planning teams were also reinstated and asked to identify only a few of the high priority issues that were relevant for their district, that could be substantially addressed over the next 3-5 years and that would fit within the regional knowledge strategies.

1.2 Introduction

This RMP examines, within the Prince Rupert Forest Region, 'investment needs' of the forested land base while considering longer-term implications. The guidelines and ground rules used to develop the RMP plan are highlighted in Appendix A. These were determined jointly by MoF, MELP and FRBC. The ground rules are used as a benchmark against which the plans are evaluated, and include geographic units, process co-ordination, process participants, plan process and content, and conflict resolution.

This plan addresses FRBC land-based programs only. They are:

- Sustainable Harvest (SH)
- Enhancing Environmental Values (EEV)
- Strengthening Sustainable Forest Management (SSFM).

For each of the above programs, this RMP provides the strategic objective for managing the resources under each program along with the strategies and opportunities necessary to meet that objective. Investment priorities and opportunities have been identified along with the 'critical' and optimal levels of delivery for each activity.

A significant portion of the funding for these investments is provided through the Skeena/Bulkley Region of FRBC under their land-based programs. Although MoF and MELP have the mandate for administering the land base, much of the resource investments may be delivered by stakeholders other than these government ministries. The ministries therefore provide FRBC and the other stakeholders guidance as to which activities are sound resource investments for achieving the resource management objectives. This often includes considering timing, quantity and location of the work as well as the type of work that needs to be delivered. Details describing stakeholder involvement into the RMP process are listed by Forest District and program in Appendix B.

This RMP is divided into 3 component parts according to the FRBC programs listed above. In section 1.4, data from each of these components are summarized from a regional perspective then described in greater detail in the body of the RMP.

1.3 Overview of Resource Management Issues

The Prince Rupert/Skeena Regions are fortunate in the supply and diversity of their forest resources. However, there are a number of issues that face resource management agencies that have no short term solution. Many of the issues are dealt with in depth in the component parts of this RMP. The following issues are of regional significance:

- One of the major issues faced by companies and the Small Business program is the high delivered wood cost. Projects such as Cost Drivers Initiative, have been successful at both bringing licensees and agencies together to mutually agreeable solutions and have resulted in some cost savings. Amendments to streamline the Forest Practices Code have all helped industry improve their competitive edge but more effort is still required to bring costs down.
- The lack of treaties with first nations has caused a great deal of uncertainty for people and licensees doing business in the area. Although one treaty, the Nisga'a Treaty, is the first completed modern day treaty of its kind, there are still many first nations groups in the province at various steps in the treaty process.
- Included with the lack of treaties is the desire of First Nations to have a more active voice in the economic activities on the land. This is very often hampered by the capacity to participate in various initiatives and is exacerbated by many initiatives happening simultaneously (i.e. treaty negotiations, interim measures and economic activity).
- Sustainability and a concern for the environment are also a top priority. This is evident by government's April 2000 announcement for a coastal frame work for ecosystem-based management.
- Landscape unit plans for the Region, while not yet complete, remain a high priority for both agencies. This is applicable to all districts whether they have higher level plans in place or not. The certainty they provide to both statutory decision makers and the licensees provides a very efficient mechanism for operational plan approvals.
- The continuing increase of mountain pine beetle infestations in the eastern districts is causing both agencies and licensees to concentrate most of their efforts in trying to control this epidemic. In addition, incidences of spruce bark beetle are on the rise. The impacts to harvesting programs to address these issues is significant with amendments to forest development plans and new silvicultural prescriptions being developed to address the recently attacked areas.

1.4 Regional Summaries of the RMP Component Data

1.4.1 Sustainable Harvest Component

1.4.1.1 Regional Rollup Enhanced Forestry Table

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	12800	23200	8350	8400	8400	33.75	432000	
Spacing	4265	4565	4315	4515	4015	984.99	4201000	
Pruning	1100	1295	1295	1265	965	1061.18	1155300	
Fertilizing	2400	2450	3016	3166	1966	333.33	800000	
Other	0	0	0	0	0	0.00	0	
Totals hectares	20565	31510	16976	17346	15346	320.95	6,588,300	
Planning and prescriptions							132000	
Total dollars							6,720,300	
Forest Health Enhancement								
Spacing	100	100	100	100	100	1,999.88	200000	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	100	100	100	100	100	99.99	10000	
Totals hectares	200	200	200	200	200	1,049.90	210,000	
Habitat Supply and Biodiversity Enhancement								
Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	1000	1000	1000	1000	1000	20.00	20000	
Totals hectares	1000	1000	1000	1000	1000	20.00	20,000	
Domestic Range								
Treatments	0	0	0	0	0	0.00	0	
Enhanced Forestry Activities - Management Unit Total								
Surveys	12800	23200	8350	8400	8400	33.75	432,000	
Spacing	4365	4665	4415	4615	4115	1,008.25	4,401,000	
Pruning	1100	1295	1295	1265	965	1,061.17	1,155,300	
Fertilizing	2400	2,450	3,016	3,166	1,966	333.33	800,000	
Other stand tending activities	1100	1100	1100	1100	1100	27.27	30000	
Totals hectares	21765	31610	17076	17446	15446	313.82	6,818,300	
Planning and prescriptions							132,000	
Studies funding							297440	
Total dollars							7,247,740	

1.4.1.2 Regional Rollup Backlog Program Table

Activities	Treatment Area Goals (ha)					Plan 2002/03		
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Legal Obligations								
Surveys	500	500	500	500	400	46.00	23000	
Site preparation	0	0	0	0	0	0.00	0	
Planting	25	0	0	0	0	1,079.70	27000	
Brushing	370	370	370	370	370	724.31	268000	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	895	870	870	870	770	355.29	318,000	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							318,000	
Backlog Reforestation								
Surveys	12792	10800	6650	6550	6150	44.29	566540	
Site preparation	200	200	200	150	0	849.97	170000	
Planting	1485	1245	1375	1175	825	900.33	1337000	
Brushing	1730	1530	1420	820	425	642.05	1110752	
Totals hectares	16207	13775	9645	8695	7400	196.48	3,184,292	
Seed purchase	200300	300	0	0	0	0.92	184400	
Prescriptions and planning dollars							72000	
Total backlog reforestation							3,440,692	
Impeded areas								
Surveys	13000	13000	13000	13000	6000	27.69	360000	
Brushing	2470	2440	2420	2350	2000	692.61	1710750	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	15470	15440	15420	15350	8000	133.86	2,070,750	
Prescriptions and planning dollars							140000	
Total impeded areas							2,210,750	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	32	100	100	100	100	1,399.69	44800	
Reforestation	32	100	100	100	100	483.89	15488	
Totals hectares	64	200	200	200	200	941.68	60,288	
Seed purchase	32000	100000	100000	100000	100000	0.25	8000	
Prescriptions and planning dollars							30000	
Total site restoration							98,288	
Backlog Program Activities - Management Unit Total								
Surveys	26292	24300	20150	20050	12550	36.12	949540	
Site preparation	232	300	300	250	100	925.78	214800	
Planting	1542	1345	1475	1275	925	894.60	1379488	
Brushing	4570	4340	4210	3540	2795	676.04	3089502	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	32636	30285	26135	25115	16370	172.61	5633330	
Seed purchase	232300	100300	100000	100000	100000	0.83	192400	
Prescriptions and planning							242,000	
Recommended studies							33,500	
Total backlog program							6,101,230	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

1.4.1.3 Regional Rollup Performance Measures

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	4,542	3,800	12,900	232	1,542	4,570	4,365	1,100	2,400	36,552	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	121,045	0	0	0	294,681	121,791	70,932	0	62,400		**670,849**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			1,100								**1,100**
1.5	Est. area that will be declared as free growing (ha)			3,600								**3,600**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	454	1,292	1,290	220	3,084	11,928	17,285	4,994	432	3,655	
3.3	Est. total full time equivalent positions (FTE)	3	7	7	1	17	66	96	28	2	20	**248**
4.1	**Forest Health Enhancement (ha)**											**200**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**1,000**
5.3	Est. area with secondary value provided to biodiversity (ha)											**2,200**

1.4.1.4 Regional List of Proposed Studies

Rank	Project Name	FRBC's Cost 2002/2003
LAKES		
1	Operational Trial of Disc Trenching	$8,500
2	Hard Pine Rust Study	$25,000
	TOTAL	$33,500
BULKLEY		
1	Balsam Release / Fertilization Impacts	$20,000
2	Review information required by the Chief Forester to change OAF value in the Timber Supply Analysis	$20,000
3	Review non-contributing types to determine how these can contribute to the future TSA timber supply.	$20,000
	TOTAL	**$60,000**
MORICE		
1	Quantify, assess, rehabilitate non-productive roads and landings	**$153,440**
NORTH COAST DISTRICT		
2	Broadcast fertilization screening trials in the CWH vh2 to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will provide additional information to that gathered from the WFP project.	$40,000
1	Broadcast fertilization screening trials in the CWH vm to determine whether there will be a benefit to stand growth from fertilization. This is the third year of a 5 year study. If stand growth is improved then a follow up cost benefit analysis will be performed.	$44,000
	TOTAL	**$84,000**
	REGIONAL TOTAL	**$330,940**

1.4.1.5 Regional Rollup Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	21,765	31,610	17,076	17,446	15,446	314	6,818,300
Planning, prescriptions and seedlings							429,440
Backlog Program Field Activities	32,636	30,285	26,135	25,115	16,370	173	5,633,330
Planning, prescriptions and seedlings							467,900
Totals	54,401	61,895	43,211	42,561	31,816		13,348,970

Performance Measures	
Potential total merchantable volume increment in 65 years	670,849 m^3
Estimated ha that will be reclassified as stocked	1,100 ha
Estimated ha that will be declared as free growing	3,600 ha
Estimated total full time equivalent positions generated	248 FTEs
Forest health enhancement area	200 ha
Planned area for specific wildlife forage or habitat maintenance	1,000 ha
Estimated area with secondary value provided to biodiversity	2,200 ha

1.4.1.6 Regional Rollup of Woodlot Program

In May 2000, FRBC staff and the executive of four woodlot Associations in the Prince Rupert Forest Region decided that a plan describing the needs of woodlots over three years was needed to support funding requests. The Associations were also interested in examining the overall needs of woodlot licensees in the region.

Table of Backlog and Enhanced Forestry Activities

Activities for Enhanced Forestry

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0.00	0
Spacing	75	20	656.67	49250
Pruning	42	0	720	30240
Other	0	0	0.00	0
Totals hectares	117	20	0.00	79,490
Planning and prescriptions				700
Total dollars				80,190

Activities for Backlog Program

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	915	984	113.97	104278
Site preparation	76	0	938.18	71302
Planting	100	123	409.76	40976
Brushing	251	79	600.98	150847
Totals hectares	1342	1186		367,403
Seed purchase	54900	189120	0.24	13,305
Prescriptions and planning dollars				
Total backlog reforestation				380,708

Enhanced Forestry and Backlog Program Activities - Management Unit Total

Surveys	915	984	113.97	104278
Site preparation	76	0	938.18	71302
Planting	100	123	409.76	40976
Brushing	251	79	600.98	150847
Spacing	75	20	656.67	49250
Pruning	42	0	720	30240
Other	0	0	0.00	0
Totals hectares	1459	1206		446,893
Seed purchase	54900	189120	0.24	13,305
Prescriptions and planning				700
Recommended studies				
Total Program				460,898

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

1.4.2 Enhancing Environmental Values

1.4.2.1 Regional *Watershed Unit Summary*

Region: Prince Rupert	**Number of Watershed Units**
Key watershed units that are Category I	209
Key watershed units that are Category II	20
Key watershed units that are Category IIB	0
Key watershed units that are Category III	111
Key watershed units that are Category IV	2
Key watershed units that are Category V	45
Number of Key Watershed Units (Sum of key categories I - V)	387
Total Number of priority key watershed units	189
Total Number of Targeted watershed units	94
Total Number of watershed units (key and non key)	387

1.4.3 Strengthening Sustainable Forest Management Component

1.4.3.1 Regional Project Summary Table

The following Table summarizes all the potential projects in the PRFR. These are a combination of ongoing and new projects.

SSFM Issue #	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Yrs	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total[6]		
1 1	ReA	Workshop-landscape modelling	E, U	N	R	TSR, LRMP, LUP	2003	RIP	4,500	1	18,000	18,000				40,500	3	
	ReB	Workshop-successional pathways	E, U	N	R	TSR, LRMP, LUP	2003	RIP	4,500	1	18,000	18,000				40,500	3	
	ReC	Workshop-NDT data models	E, U	N	R	TSR, LRMP, LUP	2003	RIP	4,500	1	18,000	18000				40,500	3	
	ReD	Workshop-indicators of biodiversity conservation	E, U	N	R	TSR, LRMP, LUP	2003	RIP	4,500	1	18,000	18000				40,500	3	
1 23, 3 11	Re	S4 - S6 stream protection		E	R	SLUP, LUP, certification	2004	RIP	>500K	5	100,000	100,000				200,000	2	
1 3	Re	Data Sharing	E,U	E	R,P		2005	RIP	75,300	1	100,000	100,000	300,000				3	H
2 2	Re	Various	E, U, N	E			2008	LUCO, HCTF, RIP	2,000,000	5	750,000	750,000	750,000	750,000	750,000	5,750,000	10	
3 1	Re722 118	Terrain Stability Mapping	E,U,N	E	R	TSR, LRMP, LUP	2005		20,000	1	50,000	50,000	50,000	50,000		220,000	5	
3 1	Re7220 47	New analytical tools & models	E,U,N	E	R	TSR, LRMP, LUP	2005		26,000	1	50,000	50,000	25,000	25,000		176,000	5	
									SUB-TOTAL		1,122,000	1,122,000	1,125,000	825,000	750,000			
2 2	La1	Sensitive Wildlife Studies	N	E	DLA/DMO	TSR III/LUP	2006	IFPA	330,000	3	190,000	190,000	80,000	80,000		870,000	7	1
1 2	La2	Fish Stream Habitat Inv.	N	E	DLA	TSR III/LUP	2003	NONE	700,000	6	200,000					900,000	7	4
1 3	La3	VRI	N/U	E/N	DLA	TSR III/LUP	2005	NONE	1,500,000	2	600,000	600,000	?	?		2,700,000	6	2
1 3	La4	PEM/TEM	N/U	N	DLA	LUP	2005	NONE				500,000	300,000	200,000		1,000,000	3	3
5 1	La5	First Nation Info. Update	U	N	DLA		2003	NONE			20,000					20,000	1	5
2 2	La6	Sensitive Wildlife Studies	N	E	DLA/DMO	TSR III/LUP	2006	IFPA			80,000	80,000	80,000	80,000	80,000	400,000	7	6
									SUB-TOTAL		1,090,000	1,370,000	460,000	360,000	80,000			
2 2	Mo2	Mtn. Goat & forest develop.	N	E	3 MU R	Plan	2004	MYA	305,000	4	85,000	50,000				440,000	6	H1
2 2	Mo3	Goshawk Nest Inv. & Mon.	N	E	3 MU R	Plan	2005	MYA	275,000	3	50,000	50,000	35,000			410,000	5	H2
1 3	Mo5	Telkwa Caribou Recovery	N	E	3 MU R	Strategic Plan	2005	MYA	250,000	4	60,000 Bulkley	50,000 Bulkley	50,000 Bulkley			385,000	5	M
2 2	Mo6	Grizzly Bear habitat suitability mapping	N, E	E	1 MU R	Strategic Plan	2002	HRMP?	45,000	1								L
1 2	Mo7a/b	Fish & Fish Habitat Inv.	N	E	1 MU R	Plan	2004	MYA	1,404,000	4	280,000	180,000				1,864,000	6	H3

SSFM Issue #	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Yrs	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total[6]		
3.1	Mo12	Temp. Sensitive Streams	N	E	1 MU R	Strategic Plan	2004?	RE	56,000	2	35,000	30,000				121,000	4	M
1.3	Mo15	Orthophotos	N	E	1 MU R		2003	MYA	300,000	1	50,000					350,000	2	H4
1.3	MoA	VRI	N	N	1 MU R	Plan	2003	MYA			400,000	400,000	400,000	400,000	400,000	2,000,000	5	H5
2.2	MoB	Bull Trout Inventory	N	N	1 MU R	Plan	2003				20,000	38,000	38,000	38,000	38,000	172,000		H6
1.3	MoC	Watershed Assessment	N	N	1 MU R		2002											
									SUB-TOTAL		920,000	748,000	473,000	438,000	438,000			
1.2	Bu 4	1:20k Fish Inv.	N	E	1 MU	SLUP,TSR	2005	RIP	648,000	5	200,000	150,000				350,000	7	1
2.2	Bu14	Caribou Recovery	E	E	R	LRMP, LRUP, TSR	2005	RIP, HCTF	231,000	4	50,000	50,000	50,000			381,000	7	2
1.3	Bu8	TSM	N	E	1MU	SLUP,TSR	2005	RIP	338,931	4	70,000					70,000	5	3
1.2	Bu3	PEM	E	N	1MU	SLUP,TSR	2005	RIP	35,000	1	80,000					115,000	2	4
3.1	Bu11	IBI	U	E	1MU	SLUP,TSR	2005	RIP	40,000	2	30,000	30,000	30,000			130,000	5	5
1.3	Bu9	Upper Operability	E	E	1 MU,R,P	SLUP,TSR	2005	RIP	136,076	3	30,000					166,076	4	7
1.2	Bu7	Spatial Modeling	E,U	E	1MU	SLUP,TSR	2005	RIP	35,000	2	50,000	50,000				135,000	4	8
2.2	Bu 17	Babine grizzly	N	E	R, P	LRMP, LRUP,	2005-2006	RIP	165,000 Kispiox	1	16,000 Bulkley	16,000 Bulkley	16,000 Bulkley	?		48,000	4-5	10
2.2	Bu	Bull Trout Species Inventory	N	N	3	LRMP	2004	RIP/WLAP	0	new	70,000	40,000				110,000	2	H
									SUB-TOTAL		596,000	336,000	96,000					
2.2	Ki6-H01	Goshawk Adaptive Mngt Trial	N, E	E	P	TSR, LRMP, LUP, IWMS	2004	RIP	527,000	5	60,000	60,000	60,000	60,000		767,000	9	H
2.2	Ki6-H02	Wildlife Habitat Suitability Model	U, E	E	Kispiox	TSR, LRMP, IWMS, LUP	2003	RIP	78,835	2	50,000					128,835	2	H
2.2	Ki6-H03	Grizzly Bear Habitat Use	N	E	Kispiox	IWMS, LRMP, LUP	2006	RIP	165,000	1	235,000	235,000	185,000	?		820,000	5	H
1.2	Ki5-H04	Fish & Fish Habitat Inv.	N	E	Kispiox	TSR, LRMP, LUP	2006	RIP	675,000	4	125,000	125,000	125,000	?		1,050,000	8	H
1.2	Ki3-H05	Index of Biological Integrity for Water Quality	E	E	R	LRMP, LUP	2003	RIP			15,000	15,000				30,000	2	H
2.2	Ki6-H06	Monitoring Grizzly Bear Presence	E, N	N	Kispiox	IWMS, LRMP, LUP	2005	RIP			50,000	50,000	50,000			150,000	3	H
2.2	Ki6-H07	Bull Trout Studies	N	N	Kispiox	IWMS, LRMP, LUP	2005	RIP			50,000	50,000	50,000			150,000	3	H
									SUB-TOTAL		585,000	535,000	470,000	60,000				
1.3	Ka1	TRIM II	U	E	district	LRMP	2003	FRBC	150,000	1	300,000					300,000	1	H
1.32 *	Ka2	G Bear	N	E	district	LRMP	2004	FRBC	75,000	3	30,000	30,000				135,000	5	H
1.32 *	Ka2	Ungulate WR	N	E	district	LRMP	2003	FRBC	75,000	3	35,000					110,000	4	H
1.32	Ka2	Mushroom	N	E	district	LRMP	2004	FRBC			15,000	25,000				40,000	2	M
1.32	Ka2	Hardwood	N	E	district	LRMP	2004	FRBC			25,000	30,000				55,000	2	M
1.32	Ka2	Red & Blue	N	E	district	LRMP	2004	FRBC			25,000	40,000				65,000	2	M

SSFM Issue[7]	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Yrs	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total[6]		
1.32	Ka2	PEM	N	E	district	LRMP	2003				180,000					180,000	1	H
1.32	KaA	VRI	N	E	district	LRMP	2003				275,000					275,000	1	H
1.2	Ka4	Fish & Habitat	N	E	district	Op Plan	2003		135,000	2	135,000					270,000	3	H
1.3	Ka7	Op Trials	N	E	district	Op Plan	2003				10,000					10,000	1	M
5.1	KaB	AOA	N	N	district	op plan	2003	FRBC			150,000					150,000	1	H
Off-Strt	Ka13	Small Wood	N	N	district	plans	2004				35,000	35,000				70,000	2	H
									SUB-TOTAL		1,215,000	160,000						
1.3	NC1	HyP3	N	E	TSA	TSR3	2005	HRMP	193,270	5	26,500	39,200	22,300			88,000	8	H
2.1	NC2	NC_PEM	N	E	TSA	TSR3	2003	HRMP	127,960	2	18,300					18,300	3	H
1.3	NC3	RCI	N	E	TSA	TSR3	2003	HRMP	44,200	1	58,200	61,200				119,400	3	H
3.1	NC4	NC_SINMAP	N	E	TSA	TSR3	2002	HRMP	96,780	1	32,000					32,000	2	H
1.3	NC5	VRI	N	E	TFL25	TSR3	2004	RIP	60,000	1	180,000	200,000	200,000			640,000	4	H
2.1	NC6	Sibec for CWH vm	N	N	L	SLUP	2003	IFP			30,000					30,000	1	H
2.2	NC7	Murrelet Study	N	E	L	SLUP	2003	IFP	82,000	1	40,000					40,000	2	H
2.2	NC8	Herring Habitat	N	N	L	SLUP	2003	IFP			75,000					75,000	1	H
2.2	NC9	Ungulate Habitat Assessmt	N	N	L	SLUP	2003	IFP			75,000					75,000	1	H
1.3	NC10	Forest Cover	N	N	L	SLUP/TSR3	2003	IFP			60,000					60,000	1	H
1.3	NC11	Ecosystem Based Managt	E	N	TSA,TFL	LRMP	2005	HRMP,IFP, WFP			65,000	20,000	20,000			105,000	3	H
									SUB-TOTAL		660,000	320,400	242,300	0	0			
									TOTAL		6,188,000	4,591,400	2,866,300	1,683,000	1,268,000			

[1] Type of knowledge investment categories: E = (Organization, Synthesis, Analysis of Info), U = (Tools, Applications, Extension to Enhance Use of E. Information) N = (Field Inventory or Research)

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total.

[7] Year one of this project is funded through the wildlife suitability model activity.

1.5 PROCESS APPENDICES

A. GUIDELINES FOR THE DEVELOPMENT OF RESOURCE MANAGEMENT PLANS - SKEENA BULKLEY REGION - 2002/2003 PLANNING YEAR.

In order to assure adequate understanding between the Ministries and Forest Renewal BC, a set of **ground rules** or **objectives** have been determined. The ground rules set the stage for RMP development, are set by Forest Renewal BC in consultation with the Ministries and are used as a **benchmark** against which the RMPs will be evaluated. The following have been established as ground rules between the Ministry of Forests and the Ministry of Environment, Lands and Parks, and Forest Renewal BC, in the Skeena Bulkley Region:

SUSTAINABLE HARVEST

1. Geographic Units

The Forest District is the basis for planning. Objectives and strategies are rolled up (if multiple) by TSAs and by TFL as distinct units. The Cassiar TSA will be incorporated into the Bulkley TSA. District plans will be collated into a regional plan.

2. Roles and Responsibilities

a. Lead:

The Ministry of Forests will lead the SH RMP process. Paul Perkins is the FRBC contact.

The Ministry of Environment will take a relatively small part in the Habitat Supply and Biodiversity component of Enhanced Forestry. This will happen regionally through identification of knowledge gaps and data compilation/analysis needs with the goal of providing environmental indicators and prescriptions for application at the Management Unit Level. More detailed input will be available for the IFPA planning areas with more site specific projects. MELP input will be from Regional habitat protection staff, district FESs where and when available (minor) and a biologist working with the IFPA group.

Licensees have direct input, existing proponents' input accepted for consideration where put forward or requested. Other stakeholders' input into silvicultural development is and continues to be through LRMP process, which drives objectives. Representatives from Resource Management Committees, Steering Committees, or SLUP may be invited as locally determined. Licensees will lead on TFLs. Current RMP will be used as a starting point; participant input will be sought and adjustments made to existing plans for this planning year. Substantive agreement is sought on the objectives and strategies by geographic unit, as well as the list of opportunities developed.

b. Steering Committee:

The Steering Committee is composed of: Neil Endacott (MoF), Don Reid (MELP) and Paul Perkins (FRBC).

The Steering Committee will:

- co-ordinate communication;
- filter out issues;
- deal with conflict resolution;

- ensure consistency of format and content.

c. **Participation and Attendance**:

- Ministry leading the process (MoF) will request participation of stakeholders (licensees, others – as defined above) with timelines appropriate to the reasonable completion of the RMP.
- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report and final RMP.

d. **Consultation**:

- See also lead roles
- In a process run by the Steering Committee, local planning units will derive a list of participants.
- Participants in the RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. **Feedback**:

- The draft RMP will be fed back to the participants **(by June 30th)**
- Participants to respond back with final comments **(by July 31st)**

f. **Consultation Reports**:

- A summary of participant consultation will be provided to Forest Renewal by the Ministries in conjunction with the submission of the RMP. The summary may be provided on the attached participant matrix.

3. Forest Renewal BC Input

a. **Performance Targets**

- Will be at a Regional level

b. **Investment Level Estimates**

- Will be at a Planning Unit level

c. **Participation in process**

- Will commit to having a person available in an advisory role (Paul Perkins)

4. Process for RMP Development

4.1 RMP Content

a. **Per Guidelines**

- Criteria, strategies, objectives, and ground rules to be established by MoF/Licensees
- Opportunities within the strategies to be identified jointly by participants
- Objectives and opportunities to be ranked (prioritized) where possible

b. **Research**

- Significant issues requiring further study are to be identified for referral to the research process.
- Issues will be identified as operational (operational trials) or strategic in nature.

- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. Outcomes and Performance Measures

- will be included in the new structure, as per the new guidelines (Tab 8, pg. 26 – Performance Measures table)

d. Cost Estimates

- required as per tables
- to be included by opportunity identified
- cost trend activities

4.2 RMP Format

- each unit of the SH component of the RMP will be of consistent format
- by Planning Unit
- collated into the SH component of the Regional RMP
- format will address all the requirements of the RMP guidelines
- Table of Contents to be supplied to each unit to be followed to ensure consistent format

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Ranking of priorities and opportunities will be tied directly to objectives and strategies plan. Main stakeholders develop objectives and strategies using RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final **RMP** will be **THE** Source Document for FRBC investments. **The highest priorities and value opportunities identified will be selected for investment.**

B. ENHANCING ENVIRONMENTAL VALUES

1. Geographic Units

The existing RMP will form the foundation for the current RMP development. MoF and MELP will determine the operational watershed units (whole watershed level, landscape level, etc.) for planning purposes. MELP will lead in the identification of key watersheds (high water/fish values) at the regional level. The key units will be used as prioritization units at the district level for establishment of priority key watersheds (categories I-VI). In aggregate, the work, including tables, maps and introductions will form the WRP portion of the regional RMP. Twenty percent of the priority key watersheds will be targeted for completion. FRBC will lead the latter process as part of the Regional Investment Planning process.

2. Roles and Responsibilities

a. Lead:

MELP will be the lead and will establish and identify key watersheds, and with MoF, jointly submit the plan following consultation with the EEV Steering Committee. Details of the work to be implemented (i.e. at the activity level) will be identified at the workplan stage in conjunction with FRBC workplan development. One of the main functions of the RMP is to identify the priority key watersheds to be worked on. MYA holders are directly involved in Step six of the Attachment A of Appendix II of the RMP guidelines. DFO will also be invited to provide input as to fish habitat priorities. These participants provide information that would be specifically applicable to the RMP development. Those who have technical input for the RMP will be asked to participate in the development of specific parts of the RMP (i.e. establishing priority key watersheds).

b. Steering Committee:

Members:

- MELP: Jeff Lough (Lead)
- MoF: Howard DeBeck
- FRBC: Bob Purdon
- DFO ??

The Steering Committee will:

- co-ordinate communication;
- filter out issues;
- deal with conflict resolution;
- ensure consistency of format and content.

c. Participation and Attendance:

- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report and final RMP.

d. Consultation:

- See also lead roles
- In a process run by the EEV Regional Steering Committee, local planning units will derive a list of participants.
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. Feedback:

- The draft RMP will be provided to the participants for comment **(by June 30th)**
- Participants to respond back to MELP Regional WRP Specialist with final comments **(by July 31st)**

f. Consultation Reports:

- A Matrix will be provided by the ministries to summarize partner consultation for the purpose of tracking participation and responses

3. Forest Renewal BC Input

a. Performance Targets

- Will be at a Regional level.

b. Investment Level Estimates

- Will be at a Planning Unit level.

c. Participation in process

- Will commit to having a person available in an advisory role (Bob Purdon).

4. Process for RMP Development

4.1 RMP Content

a. Per Guidelines

Steps 1-5 of Guidelines Attachment A of Appendix II

- Review existing RMP for consistency with current guidelines; make necessary changes
- Regional identification of key watersheds (watershed atlas)
- Establish key watersheds(H, VH fish and water quality values)

Step 6 of Attachment A of Appendix II

- District consultation with stakeholders
- Determine Priority Key Watersheds (Category I, II, III, IV, V, VI).

These make up the RMP. Details of the activities within priority watersheds are to be developed at the work plan stage.

b. Research

- Significant issues requiring further study are to be identified for referral to the research process.
- Issues will be identified as operational (operational trials) or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. Cost Estimates

- leave past costs in, pending further discussion
- no future cost estimates

4.2 RMP Format

- The WRP section of the RMP will consist of 3 sections:

i) RMP description including introduction, description, methods, and objectives
ii) Watershed tables (Tables 3(a) and 3(b))
iii) Watershed atlas (maps)

- There will be one WRP section for the RMP for the Region
- Format will address all the requirements of the RMP guidelines
- Table of Contents to be developed to ensure consistent format

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Determination and ranking of priority key watersheds will be tied directly to RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final **RMP** will be **THE** Source Document for FRBC investments. **The highest priorities and value opportunities identified will be selected for investment.**

C. STRENGTHEN SUSTAINABLE FOREST MANAGEMENT

1. Geographic Units

Regional plan with input from the districts on issues, strategies and project recommendations. Knowledge strategies developed in regional framework at management unit level. Management units for this component are Forest Districts. Cassiar will be treated as a separate management unit from Bulkley.

2. Roles and Responsibilities

a. Lead:

MoF and MELP will assume a joint lead role in development of RMP. RMP Steering Committee is composed of Greg Rawling (MoF), Don Reid (MELP) and Butch Morningstar (FRBC). Contacts for the SSFM component are : Ruth Edwards (MOF), Don Reid (MELP) and Paul Perkins (FRBC). A contract facilitator will be hired to co-ordinate the activities of the Regional Strategic and Regional Planning Teams. Level of contribution to the contract to be determined by the RMP Steering Committee.

b. Regional Planning Teams

- The regional planning teams will consist of 1) a Regional Strategic Team (RST) composed of senior members of MoF (RM, FSIM), MELP (RD, FRP Coordinator); FRBC (RD); LUCO (IAMC co-ordinator) and two industry representatives and 2) a

Regional Planning Team (RPT) composed of technical experts from MoF, MELP and industry.

- The RMP Strategic Team will:
  1. provide regional vision and strategic direction
  2. reconfirm key strategic issues
  3. The Regional Strategic Team will provide direction as necessary and review final RMP documents
- The Regional Planning Team will:
  1. provide technical direction and framework for the RMP
  2. ensure framework is provided per steps 2-5 of section 4.1a
  3. provide advice and guidance to the RST where needed
  4. assist district planning teams in completing knowledge strategies
  5. provide direction for facilitator to compile draft and final RMP.

c. **Participation and Attendance**:

- Ministries leading the process will request participation of stakeholders with timelines appropriate to the reasonable completion of the RMPs.
- Industry representatives are encouraged to participate at the RST and RPT levels, however, it is expected that most participation will be at the district or management unit level.
- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report and final RMP.

d. **Consultation**:

- See also lead roles
- MoF will make recommendations for the establishment of local planning teams
- Local planning teams will consist of those stakeholders with available technical expertise to contribute to construction of the RMP. Generally, the teams will be similar to previous years but also include as a minimum:
  - Forest Ecosystem Specialists (MELP-all districts)
  - The Wet'suwet'en (Lakes, Morice, Bulkley)
  - IFPA (Lakes, Morice)
  - Lakes Community Forest (Lakes)
  - Kitsumkalum (Kalum)
  - Nisga'a (Kalum)
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. **Feedback**:

- The draft RMP will be fed back to the participants (**by June 30th**)
- Participants to respond back with final comments (**by July 31st**)

- Subject to further discussion and agreement between the agencies, the RMP will be presented for information purposes to a broader group of stakeholders in September 2001.

f. Consultation Reports:

- Tracking participation and responses
- The agencies will provide a report on consultation and meetings including as a minimum, when meetings/consultations were held, the subject matter of the meeting/consultation, who attended, who declined to attend, the date and time of the meeting/consultation.

3. Forest Renewal BC Input

- **Performance Targets:** Will be at a Regional level
- **Investment Level Estimates:** Will be at a Planning Unit level
- **Participation in process:** Will commit to having a person available in an advisory role

4. Process for RMP Development

4.1 RMP Content

a. Per Guidelines

- The guidelines (March 2001) will outline the required content of the RMP
- Opportunities within the strategies to be identified jointly by participants at a management unit level, within the regional framework (see steps below)
- Objectives and opportunities to be ranked (prioritized) where possible
- The following steps are the agreed upon process for identifying investment strategies and knowledge gaps recommended to FRBC for funding. These steps will identify integrated projects and opportunities to address key priority issues in a regional framework, with local significance:

(i) The RMP steering committee will reconvene the RPT and the RST and hire a facilitator to co-ordinate the progress of the SSFM section of the RMP

(ii) RPT and RST to confirm or adjust regional priority issues

(iii) RPT to synthesize the functional relationships within issues

(iv) Redefine the knowledge strategies for regional priority issues so that gaps may be identified and filled in a logical sequence (per the functional relationships), use existing management unit projects and add others as necessary.

(v) Facilitator and RPT reps to work with district planning teams for local understanding of strategic approaches (step 4) to knowledge strategies. Districts need to understand and buy into functional relationship approach to priority issues strategies and define and recommend management unit (district) strategies for investment. These strategies should fit within current budget levels and must integrate with regional knowledge strategies at the management unit level. Within this framework, projects would be prioritized within the strategies for the defined term of the RMP.

(vi) District planning teams must provide rationale for any off-strategy (step 5) investment recommendations. These rationale must demonstrate how proposed deviations meet an integrated district or regional SFM plan.

b. Research

- Significant issues requiring further study are to be identified for referred to the research process.
- Issues will be identified as operational or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. Outcomes and Performance Measures

- If required, will be agreed upon by the RMP steering committee in consultation with the Regional Strategic Team

4.2 RMP Format

- As per guideline (currently available)
- A contractor will be hired by MoF to compile the RMP as per the guidelines

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Ranking of priorities and opportunities will be tied directly to objectives and strategies plan. Main stakeholders develop objectives and strategies using RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final **RMP** will be **THE** Source Document for FRBC investments. **The highest priorities and value opportunities identified will be selected for investment.**

B. STAKEHOLDER INVOLVEMENT FOR THE DEVELOPMENT OF RESOURCE MANAGEMENT PLANS - SKEENA BULKLEY REGION - 2002/2003 PLANNING YEAR.

SH

Consultation between MoF and MYAs regarding the SH component of the RMP was initiated by MoF staff in each Forest District at the general RMP meeting (see participation matrix for each district). Because widespread satisfaction with the 01/02 RMP exists, information in the 02/03 RMP is largely based on the 01/02 RMP.

EEV

The EEV 2002-03 RMP was primarily based on data gathered for 2000/01 and 2001/02 RMPs. Very few changes in the prioritization exercise were made since the release of the 2001/02 RMP. Appropriately, a request for review of the current RMP (2001/02) and a request for information (Table 4) was released via email (EEV-Appendix C) to MoF districts, WRP Multi Year Agreement holders, FRBC, and Fisheries and Oceans Canada (DFO) on June 12, 2001. In addition to this information update and request, MoF district offices initiated meetings with MYAs to outline the RMP process. The consultative process for the 2002-2003 RMP is outlined in the participation matrix for each district.

The following is the correspondence regarding EEV for the 2002-2004 RMP consultation:

From: Lough, Jeff ELP:EX Sent: Tue Jun 12 2001 4:16 PM
To: Sawchuk, Kelly FOR:EX; Ottens, Ralph FOR:EX; Broster, Chris ELP:EX; Harrison, Alan L FOR:EX; Marleau, Grant FOR:EX; Thibeau, John FOR:EX; Vantine, Keith FOR:EX; Van Dolah Greg (E-mail); Karen_Grainger@weldwood. com (E-mail); Deidrie Quinlan (E-mail); John Brockley (E-mail); Alan Baxter (E-mail); Lyle Bolton (E-mail); 'Robinson, Ralph'; 'Hayworth, Kim'; Owen Fewer (E-mail); Ken Hall (E-mail)
cc: DeBeck, Howard W FOR:EX; Purdon, Bob FRBC:EX; Larden, Troy ELP:EX; PendrayT (E-mail)
Subject: RMP Information Request

Greetings. As some of you may be aware I am currently compiling information for submission of the annual WRP Resource Management Plan (RMP) for the Skeena-Bulkley FRBC Region. This 2002-2003 RMP must be submitted by the end of June so I am required to solicit some information from the districts and the Proponents of the WRP activities. I don't think this exercise will be too onerous for you as there is **only one table that requires data to be entered**. Could the district staff please check my mail out list above and forward this note to any MYA contacts I may have missed. Chris Broster could you please forward this to Whitney, and Lance.

Step 1.

Please **review** the subunit designation for WRP RMP Table 3 to confirm that the watersheds that are designated appropriately (i.e. Priority Key, Targeted) as per planning discussions with FRBC. This spreadsheet has a tab for each district and a one for my regional roll up. The double line on each spread sheet delineates all the targeted subunits for each district. Generally, there were very few changes to the Priority Key subunit designations from the 2001-2002 RMP . This said, there were significant changes to the Targeted units due to reduced funding levels and subsequent refocusing of work to the highest priority watersheds. This does **not** mean sub units that are not currently targeted will never have FRBC funded restorative work completed in them. As long as the sub units are identified (justifiably) as a Priority Key watershed unit, restorative work can be implemented those areas in the future. Those priority areas will be addressed as the currently Targeted are subunits are "completed" (as described in the Restoration Plans). If you notice any inconsistencies or items requiring edits in Table 3, please advise me and I'll make the revisions. Remember that this planning exercise is for the year **2002-2003.**

Step 2.

The second table, WRP RMP Table 4, would best be described as component progress tracking information. This needs to be completed for the Targeted and Key Priority watershed sub-units **only**. The status of work information must be updated on the spreadsheet by the proponents and/or district staff. The four categories that need to be entered for each component are Planned **(P)** Ongoing (**O**) Completed (**C**) and Not Required (**NR**). These categories need to be entered for each of the watershed's components (i.e. instream, upslope etc.) as they would stand at the end of this planning year (March 31 2001-2002).
If you need to know what you entered last year for component progress tracking in 2001-2002, the spread sheet is also attached below.
EEV RMP Component Tracking .xls

Additional information
I will hotlink Internet URL that will allow you to review the 2002-2003 RMP Guidelines that were used to develop this RMP. Please be aware that some minor aspects of these RMP guidelines were modified for this region (in consensus with FRBC) to improve the usability of the information gathered (where the guidelines somewhat deficient).
http://www.for.gov.bc.ca/cpp/rmp/guidelines/200203/
If by chance you would need to review this current years RMP again That document is attached below.
2000-2001 EEV RMP.doc
If you have any questions, concerns or editorial comments please call me or drop me an email. I will compile all the tables and send the RMP out for stakeholder review by the months end. To meet this date I would appreciate it if you could return any comments and the Table 4 information by **June 22**. Thank you in advance for you assistance with this planning exercise.
Jeff Lough
Watershed Restoration Program
Fisheries Specialist
(250) 847-7337 Tel
(250)847-7728 Fax
<mailto:Jeff.Lough@gems2.gov.bc.ca>

SSFM

April 25th	Regional Planning Team re-established (see Appendix A in SSFM section for list of members).
May 3rd	RPT meeting to review and confirm high priority regional issues
May 18th	RPT meeting to review Templates 1 and 2 (Describing each issue and outlining the knowledge strategy for each issue) which were prepared by the RPT.
	"A Guide to SSFM" was prepared. It provided background for the district meetings and the RMP.
May 22nd	Templates 1 and 2 were circulated to each district for feedback. At this point, meetings were set to discuss SSFM at the district level. They were held in 5 districts from June 5th-12th (see participation matrix for each district for more details).
June 15th+	Districts begin sending templates 3 and 4 to be compiled into RMP.
June 21st	Regional Strategic Team was updated on the process to date (see Appendix A in SSFM section for list of members).
June 26th	In addition to completing templates 3 and 4, Districts are asked to provide more information regarding the high priority issues they are addressing.
July 5th	Draft of SSFM section complete.

Lakes Forest District

<table>
<tr><th rowspan="2"></th><th rowspan="2">EVENT</th><th colspan="2">V.Soehl Coordinator</th><th colspan="2">P.Perkins FRBC</th><th colspan="2">K. Vantine MoF LAKES</th><th colspan="2">J. Illes MOF LAKES</th><th colspan="2">M. Price MoF LAKES</th><th colspan="2">R. Edwards MoF REGION</th><th colspan="2">B. Watson MoF LAKES</th><th colspan="2">B. Chapman BFP</th><th colspan="2">B. Laforge L & M LUMBER</th><th colspan="2">B. Purdon FRBC</th><th colspan="2">B. Walker FSLM</th><th colspan="2">C. Stevens MoF LAKES</th><th colspan="2">Kira Dunham BLNDC</th></tr>
<tr><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th></tr>
<tr><td>1)</td><td>RMP meeting-June 1st</td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td>X</td><td></td><td>X</td><td></td><td></td><td>X</td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td></td><td>X</td><td></td><td>X</td></tr>
<tr><td>2)</td><td>SSFM meeting-June 8th</td><td></td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>3)</td><td>EEV meeting</td><td colspan="26">MEETINGS FOR EEV ARE COMPLETED ON AN ONGOING BASIS. FOUR MEETINGS HAVE BEEN HELD SINCE JANUARY 1ST. REULAR ATTENDEES ARE K. VANTINE, K. GRAINGER AND G. VANDOLAH.</td></tr>
<tr><td>4)</td><td>SH meeting</td><td colspan="26">MEETING WAS CANCELLED CONSULTATION WAS COMPLETED THROUGH MINISTRY AND LICENSEE CONTACTS THROUGH EMAIL. ALL DECISIONS WERE MADE ON THE JUNE 1ST MEETING</td></tr>
<tr><th rowspan="2"></th><th rowspan="2">EVENT</th><th colspan="2">J. Burbee IFPA</th><th colspan="2">J. Stadt MELP</th><th colspan="2">K. Grainger BFP</th><th colspan="2">Yekooche 1ST NATION</th><th colspan="2">S. Abels MoF LAKES</th><th colspan="2">T. Calhoun BFP</th><th colspan="2">T. Olafson FLSM</th><th colspan="2">G. Van Dolah FLSM</th><th colspan="2">W. Stadey MoF LAKES</th><th colspan="2">C. Manning BLCOMFOR</th><th colspan="4">J. Brockley CANFOR</th><th colspan="2"></th></tr>
<tr><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th><th>I</th><th>A</th></tr>
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<tr><td colspan="28">First Nation Involvement: Representation from all First Nations with traditional territory in the Lakes FD received a written invitation for the June 1st meeting. Representation from BLNDC and the Yekooche First Nation were present at the meeting. One band declined but asked to receive any information about possible silviculture projects that could result from the RMP. No other First Nations acknowledged the invitation to the meeting.</td></tr>
<tr><td colspan="28">EEV: 1) 01/02 RMP re-released for comment to all the District MYAs and MoF. No comments received.
2) Table 3 from 02/03 RMP circulated to all the District MYAs and MoF. No comments received.
3) Information request for Table 4 in 02/03 RMP. None received.</td></tr>
</table>

I = INVITED - did not attend/participate

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Event = meeting, conference call, document review request, etc. where input is requested

Participant is person or organization with whom input is requested

This matrix may be used by strategic objective, by district or other means as a summary document.

Morice Forest District

	EVENT	V. Soehl coordinator		R. Edwards MoF Region		M. Buirs MoF Morice		J. Brockley Canfor		D. Stewart MoF Morice		D. Quinlan HFP		M. Shamlock MoF Morice		J. Thibeau MoF Morice		J. Lough MELP		P. Perkins FRBC		B. Morningstar FRBC		G. Ehalt Canfor		jim@netbistro.com	
		I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A
1)	SSFM meeting-June 6th		X		X		X		X		X		X		X	X		X		X		X		X		X	
2)	EEV e-mail June 12th from J. Lough requesting input							X				X				X	X										
3)	RMP meeting-May 22nd	X				X			X		X		X		X		X		X		X				X	X	

	EVENT	D. Singer MoF Morice	
		I	A
1)	SSFM meeting-June 6th	X	

The invitation to the FES was over looked for the June 6th SSFM meeting. Once the error was discovered (June 22nd), the FES and Regional MELP staff were contacted for input.

As far as the invitation to the Wet'suwet'en,

CanFor, HFP, MELP, and MoF had a discussion with Paul Perkins (FRBC) at the coordination meeting (May 22nd) as to how the Wet'suwet'en should have input into the RMP. It was decided that, from past experiences, the best approach would be to send out the RMP once a complete draft was in place.

EEV: 1) 01/02 RMP re-released for comment to all the District MYAs and MoF. On June 15th, HFP requested that the Morrison subunit be considered targeted.

2) Table 3 in 02/03 RMP circulated to all the District MYAs and MoF. No editorial comments received.

3) Information request for Table 4 in 02/03 RMP. None received.

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Bulkley TSA

	EVENT	PIR		SCI		Canfor		Wet'suwet'en		Dist MELP		Dist MoF		Reg MoF		FRBC		Facilitator	
		I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A
1)	**SSFM**--Dist. RMP Consultation	2	2	1	1	1	0	1	1	1	1	7	5	0	1	0	1	1	1
2)	**SSFM**--Dist Template Dev.	1	1	1	1	0	0	0	0	1	1	1	1						
3)	**Sustainable Harvest**	2	2	1	1	1	0	0	0	1	0	1	1	0	0	1	0	0	0
4)	**EEV**--May 22nd	2	1	1	0	1	0	0	0	1	0	1	1	1	0	0	0	0	0

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List of Participants:

Al Baxter	PIR	847-2656
Jay Baker	PIR	847-3680
Todd Mahon	SCI	847-4201
Scott Trusler	Wet'suwet'en	846-9832
James Cuell	Dist MELP	847-6300
Rick Braam	Dist MoF	847-6306
Robert D. Mitchell	Dist MoF	847-6314
Anna Regnier	Dist MoF	847-6311
Glen Buhr	Dist MoF	847-6324
Bob Copley	Dist MoF	847-6344
Ruth Edwards	Reg MoF	847-7759
Bob Purdon	FRBC	847-7841
Virginia Soehl	Facilitator	847-2346

EEV: 1) 01/02 RMP re-released for comments to all the District MYAs and MoF. No comments received.
2) Table 3 from 02/03 RMP circulated. No comments received.
3) Information requested for Table 4 of 02/03 RMP. PIR responded on June 11th.

Cassiar TSA

	EVENT:	Taltan		MELP		MoF	
		I	A	I	A	I	A
1)	Dist. RMP Consultation	1	1	1	1	2	2

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Event = meeting, conference call, document review request, etc. where input is requested

Participant is person or organization with whom input is requested

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List of Participants:

Brad Nothstein	Taltan
Norm McLean	MELP
Bob Copley	Dist. MoF
Rick Braam	Dist. MoF

Kispiox Forest District

	EVENT	SCI		Kispiox Band		Gitanyow		Gitsegukla Band		MELP		Suskwa Re Society	
		I	A	I	A	I	A	I	A	I	A	I	A
1)	EEV - Restoration Plans (March 2001) - forwarded for comment			x		x		x				x	x
2)	SH - Phone/Email	x	x										
3)	SSFM - Phone/Email	x	x							x	x		

EEV: 1) 01/02 RMP re-released for comments to all the District MYAs and MoF. No comments received.
2) Table 3 from 02/03 RMP circulated. No comments received.
3) Information requested for Table 4 of 02/03 RMP. MoF responded on June 20th.

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Participant is person or organization with whom input is requested
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Kalum Forest District

	EVENT	B. Wilson MoF Kalum		V. Soehl coordinator		R. Edwards MoF Region		B. Purdon FRBC		K. Haworth		D. Keating		M. Waszkiewicz MoF Kalum		K. Atkinson		Don Reid MELP		R. Robinson Nisga'a		Kitsumkalum		Haisla	
		I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A
1)	SSFM meeting-June 12th		X		X		X		X		X	X			X	X		X			X	X		X	
2)																									

EEV: 1) 01/02 RMP re-released for comments to MELP and MoF representatives. No comments received.
2) Table 3 from 02/03 RMP circulated. One editorial comment received from Skeena Sawmills Implementing Partner Kitimaat Village Band Council.
3) Information requested for Table 4 of 02/03 RMP. Information received from Skeena Sawmills Implementing Partner Kitimaat Village Band Council.

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North Coast Forest District

	EVENT	D. Wharton MoF DNC		V. Soehl coordinator		R. Edwards MoF Region		B. Purdon FRBC		B. Adair MoF DNC		Tsimshian Tribal Council		P. Scharf		D. Cuzner MoF DNC		D. Bing/ Ken Hall Western Forest Products		J. Scot MoF DNC		S. Liepins MELP FES		DFO		B&D		MELP		FRBC (Fish)		Triumph	
		I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A	I	A
1)	SSFM meeting-June 11th		X		X		X		X		X	X			X		X	X			X	X											
2)	SH information request June 1		X				X				X				X		X		X						X		X		X		X		X
3)	MoF e-mailed MYAs re: EEV on June 1st & 6th																																
4)	RMP E-mail for web page Feb. 19		X																														
5)	SSFM-Request June 1		X				X		X		X				X		X		X				X		X		X		X		X		X
6)	RMP info request update#3 June6		X				X				X				X		X		X								X		X				X
7)	EEV information request June12		X						X						X				X						X				X		X		X
8)	EEV information request June13		X												X														X				X
9)	Information and invitation meeting with Debbie Jeferies and phone call May 25											X																					

EEV: 1) 01/02 RMP re-released for comments to MYA and MoF representatives. No comments received.
2) Table 3 from 02/03 RMP circulated. Comments received from MoF and Interfor representatives.
3) Information requested for Table 4 of 02/03 RMP. Information received Interfor on June 21st.

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2.0 SUSTAINABLE HARVEST (SH) REPORT

2.1 Regional Silviculture Priorities and Issues

Harvesting forests and milling timber into lumber and chips has been a major industry in the Prince Rupert Forest Region (PRFP) for many years. It was not until 1982 that replanting these forests began in earnest and in 1987 planting trees after harvest became the duty of the logging companies. Since the highest risk in growing forests is at establishment, the government passed legislation requiring the companies to manage these stands, past the establishment stage into a period called Free Growing.

Today, many of these forests are at this free growing stage. It is therefore critical that these forests be set on a management path which will achieve the product objectives set for the timber supply area. These product objectives could include high quality clear logs suitable for value-added industries, large saw logs which minimize the costs of harvesting and processing, smaller sawlogs which maximize the volume produced, etc. Ideally, each timber supply area will have several product objectives to ensure that the economic returns to the diverse land base are maximized. Developing the SH program will help Forest Districts minimize risk yet maintain options for the future of the forests. It is generally provincial policy not to manage areas for pulpwood production. It has always been assumed that "pulpwood" would be produced as a by-product of sawlog regimes from the forest and mill waste in the form of chips.

Some forests in the PRFP have a higher value as unmanaged forests. These natural values include wildlife, fisheries, soil, biodiversity, water quality and visual quality. Some of these forests can produce log products as well, but not at the cost of these other values.

The SH component of this RMP contains resource priorities for enhanced and backlog reforestation (blocks that were harvested, damaged or destroyed before 1987 are backlog).

Planned activities must:

- be consistent with acts, regulations, guidelines and priorities set in higher level plans;
- be consistent with government goals;
- include MoF's guiding principles for silviculture;
- incorporate the *Incremental Silviculture Strategy for British Columbia (interim)* (http://www.for.gov.bc.ca/hfp/silstrat/index.htm);
- consider riparian and habitat issues;
- result in no expected loss of investment due to fire, forest health issues, or alienation of land;
- have reasonable cost estimates within the cost caps provided;
- include activities that fit within FRBC strategic or operational commitments;
- have activities that fit within criteria for forest health maintenance and current fire and pest management.

The SH component of this RMP is broken down by Forest District beginning in the east with the Lakes Forest District and progressing west to the North Coast Forest District.

The silviculture priorities for each Forest District are summarized in the next section. Following this section, the Sustainable Harvest Component is reviewed in greater detail, by Forest District.

Although each Forest District attempted to address Sustainable Harvest in a consistent format, a great deal of variability exists between Forest Districts because available information differs, issues are wide ranging and priorities vary. It should be noted that all districts in the Prince Rupert Forest Region have completed a Silviculture Type 1 Silviculture Strategy and Kalum FD, TFLs 1 and 41 are just wrapping up detailed Silviculture Type 2 Strategies as per agreements with FRBC for SH investment planning in future RMPs.

2.2 Summary for Each Management Unit of Silviculture Priorities

Lakes Forest District:

The SH component of the RMP for the Lakes Forest District was written in consultation with industry and representation from local First Nations to outline the best possible investments to be undertaken within the TSA to ensure a long term, high quality fiber supply, continued employment, and community stability. Stakeholders analyzed several sources of information (i.e. TSR, LRMP, Draft Incremental Silviculture Strategy, Access Management Plan) and identified issues or potential concerns within the Lakes TSA.

District silviculture priorities were established primarily based on these issues. Other factors used to determine opportunities for investment included a review of the commitments and recommendations from other planning processes as well as costs, benefits, risks, timing of delivery and long term implications of treatments.

The district has completed a type I silviculture strategy for the Lakes TSA (http://www.for.gov.bc.ca/hfp/silstrat/index.htm). The top priorities from this plan are as follows:

1. Plant a mixed species in all future plantations to reduce disease (such as rust). This involves planting a higher amount of spruce than in the past. Increase planting density to mitigate losses through rust infections.
2. Survey and brush backlog satisfactorily restocked areas that are not free to grow.
3. Survey, plant and brush backlog NSR areas.
4. Survey and rehabilitate pine plantations that are NSR due to rust infection.
5. Fertilize stands previously treated that will be harvested in the next 20 years.
6. Space, fertilize and prune the best growing sites for the production of premium quality sawlogs.

The District type I strategy employed 12 participants in a development workshop. Representation from the PRFR, Ministry of Environment, Lands and Parks (MELP) and the two largest licensees in the Lakes TSA were present. Lakes District Silviculture and Operational staff were also present to help prepare the plan.

The strategy also includes legislated silviculture goals such as necessary treatments to bring a stand to free to grow. These include planting (natural regeneration is rare in the Lakes District), site preparation if needed, surveying and brushing if needed. Maximum density spacing also occurs if the stand exceeds 10,000 stems per hectare.

In summary, the Lakes District priorities, within FRBC's SH Program, are as follows:

1. Forest Health Maintenance Activities.
2. Reducing and then eliminating Backlog NSR areas in the Lakes District.
3. The six priorities of the Type I silviculture strategy which include the Stand Tending, Backlog Reforestation, Site Restoration and Forest Health Enhancement FRBC Objectives.
4. Current Fire and Pest Activities.

Morice Forest District:

The Morice Forest District critical issues and related objectives were established during the Silviculture Strategy Workshop. Tactical priorities to addressed these issues were assigned through discussion and consensus amongst the participants.

The Morice District priorities are as follows:

1. Basic Silviculture--to maintain current AAC
2. Backlog NSR--to maintain current AAC
3. Habitat Supply
4. Stand Tending Activities--to maintain timber quality.

Bulkley-Cassiar Forest District:

The Bulkley Forest District and the FRBC MYA holders in the TSA reached consensus that the Bulkley Silviculture Strategy (http://www.for.gov.bc.ca/hfp/silstrat/index.htm) be used to develop this RMP.

Silviculture investment priorities are based on the Landscape Planning hierarchy followed by the Stand Planning hierarchy. The Landscape Planning hierarchy incorporates Provincial direction and strategic planning. The elements of the Landscape Planning hierarchy must be considered in the following order:

1. The *Forest Practices Code of BC Act*
2. The Bulkley LRMP
3. Landscape Unit Planning Objectives
4. District Manager Policy.

For example, the Bulkley LRMP provided direction, as outlined in the following table, by ranking silviculture strategies by resource management zone.

LRMP Zones	Backlog	Fall Down	Incremental
Enhanced Timber Development	Very High	High	Very High
Integrated Resource Management	High	High	High
Landscape Corridor	Medium	Low	Low
Special Management Zone 2	Medium	Low	Low
Resource Management Zone	Medium	Low	Low
Other Zones	Low	Low	Low

Moreover, the Stand Planning hierarchy prioritizes obligations at an operational planning level. The stand planning hierarchy in the Bulkley TSA is:

1. Basic Silviculture
2. Backlog Silviculture
3. Silviculture Strategy to Reduce Fall Down
4. Incremental Silviculture
5. Silviculture Strategy for Non-Merchantable Timber Types.

A ranking key was developed by the Bulkley Forest District (Bulkley Silviculture Ranking Key 1999) to incorporate the priorities listed in the Landscape and Stand Planning hierarchies.

Kispiox Forest District:

Based primarily on the Timber Supply Review recommendations and LRMP strategies and objectives, the Kispiox Forest District staff developed silviculture priorities and met with major licensees for feedback (Kispiox & Cranberry TSAs Silviculture Strategies--Type 1). A discussion of silviculture priorities for the Kispiox Forest District follows.

Every five years, the Chief Forester of British Columbia establishes the allowable annual cut (AAC) for each timber supply area and tree farm licence. The Kispiox Timber Supply Review process was last completed on December 30, 1996, when the Chief Forester maintained the AAC at 1,092,611 cubic metres. When he released his determination, the Chief Forester also made several recommendations to the district. Most of these recommendations have been implemented through research within the forest district, but some items may still require further work due to lack of adequate information. These include:

- to investigate the integration of botanical forest products into landscape unit planning; and,
- to identify management strategies for wildlife.

During the determination process, one important factor that was presented to the Chief Forester was a description of not-satisfactorily-restocked (NSR) areas. This is land considered inadequately covered by a sufficient number of tree stems of desirable species as specified in the Ministry stocking standards. Backlog NSR refers to areas harvested prior to 1987 that are in this condition. In the 1995 timber supply review data package, approximately 5,500 hectares were calculated to affect the timber harvesting land base. However, district staff also presumed that all backlog NSR would be restocked by the year 2000. Using this assumption, the Chief Forester did not consider backlog NSR as a downward pressure on timber supply.

Since the 1996 determination, the status of backlog NSR has shifted considerably. Funding levels have plummeted, resulting in far less land being treated. Only 1,800 hectares has been successfully removed from the backlog total, rather than the full 5,500 hectares, which was the original district goal. This information will be incorporated in the next analysis package, which is currently being prepared. Aggressive treatment of backlog land continues to be a district priority, and is reflected in the silviculture portion of the RMP.

The Cranberry Timber Supply Review process was concluded on June 1, 1998, when the Chief Forester maintained the cut at 110,000 cubic metres per year. Similar to his Kispiox determination, the Chief Forester included several recommendations, two of which still require some work:

- to validate an appropriate site index adjustment for single and mixed species; and,
- to refine Operational Adjustment Factors for the Timber Supply Area.

Most of these recommendations should be considered within the FRBC inventory and research funding program, titled 'Strengthening Sustainable Forest Management'. This program is included in the PRFR's RMP, rather than in the district plan.

The Silviculture Strategy (Type 1) for the Kispiox TSA (1999) has identified a further 5 issues (http://www.for.gov.bc.ca/hfp/silstrat/index.htm):

- Identify the portions of the land base at minimum stocking levels, and at targets to refine density values for TIPSY projections
- Identify impact of using VDYP projections rather than TIPSY on backlog stands as to more accurately model the current management – as funding declines, and as funding sources are in flux the volume of area treated declines.
- Investigate the development of economic cut-off values for backlog reforestation efforts and its subsequent impact to the TSR.
- Evaluate the risk of treating land which may be alienated at a later time, and it subsequent impact to the TSR.

The Silviculture Strategy (Type 1) for the Cranberry TSA (Draft 2001) has additionally identified the following issues (http://www.for.gov.bc.ca/hfp/silstrat/index.htm):

- Assess areas disturbed by wildfire to more accurately report inventory information and identify areas which may require density management.
- Investigate the development of an interim deciduous management policy which addresses both habitat requirements and timber management goals.
- Develop product and quality objectives for the Cranberry TSA, with consideration to a reconciliation of product objectives with site capabilities and risk.

Enhanced silviculture treatments hold high to medium priority inasmuch as there are benefits to be realized in the TSR. However, it is important to not divert investment and effort from backlog initiatives to fulfill enhanced forestry strategies. Treating backlog NSR sites with uniform stocking and protecting plantation investments provides greater return on investments than incremental activities. In certain instances, however, financial analysis may reflect otherwise, and is dependent upon comparisons of specific sites.

Kalum Forest District:

This treatment priority rating guide was jointly developed by the Forest Service, West Fraser Mills Ltd., and Skeena Cellulose. The following table provides direction in determining which areas are treated irrespective of tenure. Upon completion of the Level 2 Silviculture Strategy (http://www.for.gov.bc.ca/hfp/silstrat/index.htm), this matrix will be reviewed and amended where necessary.

Priority	Activity
1	Backlog brushing, (herbaceous brush where crop tree survival is in immediate jeopardy)
1	Forest health treatments where a pest agent is threatening the survival or health of a stand
2	Planting of NSR blocks
3	Planting of NSR areas (where the program can be spread out over several years)
3	Surveys
3	Spacing
4	Conifer Release
4	Free growing surveys
5	Pruning

A system used to evaluate the value of juvenile spacing in the Kalum Forest District was also developed:

FACTORS	4	3	2	1	No Treatment
Species	Hw, Cw, Ba	Hw - Pl	Pl		Ss
Age	14 – 15 yrs	16 - 20 yrs	21 - 25 yrs	26 - 30 yrs	>30 yrs
Density (st/ha)	4000 – 10000	4000 - 3000	3000 - 2500	2500 – 2000	>2000
Site Index @ age 50	>30	30 - 25	25 - 20	20 – 15	<15
Access		2WD	4WD	Boat	Helicopter
Biodiversity Potential	HIGH	MEDIUM	LOW	NONE	NONE

Rating : Low priority = 0-14
Medium priority = 15-20
High priority = 21+

North Coast Forest District:

Priorities for the NCFD are identified in a Silviculture Strategy Type 1 Analysis completed March 2000 (http://www.for.gov.bc.ca/hfp/silstrat/index.htm). The key issues discussed in the strategy primarily focused on Forest Health and strategies to mitigate timber supply fall down. The forest health issues include porcupine damage prevention and deer browse damage prevention.

In addition to the silviculture strategy priorities, completing the outstanding backlog surveys and brushing is a priority.

The Silviculture Strategy also lists the following:

Issues by rank identified in the workshop that require investigation, North Coast TSA

1 Estimates of SI for future regenerated stands
1 Develop TSA-level product objectives
2 Improved mapping of visually sensitive areas
3 Investigate options for operability in northern portions of the TSA
4 Net-down factors for riparian zones
5 Regenerated stand species targets
5 Inventory label site index should reflect crop trees
5 Investigate achieved regenerated stand structures, and options for modeling
5 Refine definition of "countable stems"
6 Time-of-planting fertilizer trials
7 Investigate options for reducing slash piles re: porcupine den sites
8 Broadcast fertilization screening trials

2.3 Lakes Forest District

2.3.1 Basic Data

The Lakes Forest District is within the Lakes Timber Supply Area (TSA). Basic data for the Lakes TSA includes:

Land Area

Description	Area (ha)	Area (%)
Total Area of TSA	1,124, 552	100
Total Productive Crown Forest (TSR II)	744 896	66
Net Timber Harvest Land Base (THLB) (TSR II)	589 988	52

Source: TS analysis report-rounded to nearest 100 ha.

With the approval in principal of the LRMP, the crown forested land base and hence the timber harvesting land base has dropped with the transfer of the Entiako, Sutherland and the Uncha Mountain/Hills Protected Areas to Provincial Park Status. The Net Timber Harvest Land Base for TSR II will drop to approximately 50% of the total TSA area from 56%.

Annual Allowable Cut (AAC)

AAC Type	(m^3)
Conventional (TSR I)*	1,500,000
Deciduous	
Insect/Disease	
Marginal	
Total	1,500,000
Community Forest	23,667**
Woodlot AAC	52,600

*Effective September 1/96

**Included in the Conventional TSR I volume but will not be included in the TSR II volume.

Twenty nine percent (29%) of available timber volume is currently allocated to the Small Business Forest Enterprise Program, 431,518 cubic metres per year (less possible 5% transfer allowance) to Babine Forest Products Company, 367,194 cubic metres per year to West Fraser Sawmills Limited, 130,604 cubic metres per year (less possible 5% transfer allowance) to Babine Timber Limited, 53,267 cubic metres per year to Canfor Limited, 23,084 cubic metres per year to L & M Lumber Limited.

The current AAC for the Lakes TSA, excluding the woodlot allocation which is not considered in the TSR analysis, is 1,500,000 cubic metres per year. The district is currently waiting for TSR II AAC determination by the chief forester. Because of extensive catastrophic beetle infestations through out the southern portion of the district, the ability to maintain the current level of 1.5 million cubic metres of AAC over the medium term is uncertain. The possibilities of salvage operations in the district currently exist and it is likely that over 3.0 million cubic metres of trees will be invested each year for the term of this plan.

Site Class Profile

The site class profile is unavailable at this time.

Age Class

Age Class	(%)
NSR	0
0	1
1-20	9
21-40	1
41-140	52
141-250	36
250+	1
Total	100

Source: TS analysis report.

The current age class distribution indicates that over 64% of commercial species on the harvesting land base are over 100 years of age.

Tree Species Profile

The most abundant commercial species is lodgepole pine occurring on 77% of the THLB. Spruce is the secondary species occurring on 21% of the THLB. Sub-Alpine fir is the third most abundant species, generally occurring at higher elevations on cooler moister growing sites.

Incremental Silviculture History

Treatment	Incorporated in Timber Supply Analysis	Not Incorporated in Timber Supply Analysis
◆Backlog	Restock 2 240 ha in 15 years.	District staff expect backlog to be restocked in 5 years. Surveying and/or reclassifying of the remaining 400 hectares is expected over the next four years.
◆Conversion	1 000 ha of decid is managed forest.	
◆Commercial Thin		Only a few experimental CT projects to date.
◆Space	TIPSY used on stands regenerated over the past 20 years. Assumes incremental spacing for stocking control on stands harvested prior to '87.	Approx. 3900 ha incrementally spaced between 1987 and 1994. No spacing has occurred in 2000-2001.
◆Prune		None indicated.
◆Fertilize		Little occurring.
◆Space/ Prune		Combinations not indicated.
◆Space /Fertilize		Combinations not indicated.
◆Space/		Combinations not indicated.

Treatment	Incorporated in Timber Supply Analysis	Not Incorporated in Timber Supply Analysis
Prune/Fert		
◆ Other		None indicated.

2.3.2 Issues

A variety of plans including the LRMP and the Incremental Silviculture Strategy are applicable to the Forest District and to the TSA. These plans have been reviewed for commitments, recommendations and opportunities that will address issues and investment needs that are applicable to this RMP for the land based programs.

Presently, there are 40 woodlot licences issued in the Lakes TSA. The woodlot AAC contribution is 52,600 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees.

Individual Issue Analysis

◆ Harvest Forecast	The current harvest forecast is uncertain. It is likely that for the next five years the harvest of beetle infested timber will be a very high priority following the salvaging of dead standing timber. This will likely have serious impacts for future planning and will increase the importance of finding a mid-term timber supply.
◆ Age Class	Approx. 64% of the THLB is covered by stands greater than 100 years of age. Age class gaps occur in the 30-50 and 90-100 year age ranges due to fewer disturbances during those periods from events such as catastrophic insect, wind and fire damage. The 30-50 year gap is likely a factor in the mid-term shortfall, causing older timber to be held longer to minimize the gap. See "Issues generally not addressed," below.
◆ Forest Cover	Visual green up has been changed in TSR II to a variable green up measure ranging from a minimum of 3.0 m to above 8 m dependent on slope as described in the LRMP document. Because of the relatively flat terrain, this change is expected to relax timber constraints on the landbase. The caribou migration zone south of Ootsa Lake as been protected by a higher level plan as part of the LRMP. This area has both green-up conditions and age conditions placed on the landbase. At present this area is being heavily attacked by mountain pine beetle and it is difficult to estimate the outcome from the current infestation. Infestation levels in some areas south of Ootsa Lake have approached 100%.
◆ Backlog NSR	2 240 ha of backlog NSR. Assumed in analysis to be restocked within 15 yrs, however district expects this to actually occur within 5 years. The current backlog NSR in the Lakes District as of August 2000 is less than 400 ha.
◆ Quality (PFT, Low Sites)	Approx. 55 000 ha of PFTs were completely removed from the THLB. PFTs are defined as pure sub-alpine fir stands, sub-alpine fir stands with <30% spruce or pine content, all mature stands <17.5 m tall, all stocking class 4 Pl leading stands & Pl stands with significant aspen & cottonwood components. About 92% of PFTs are height class 2 Pl (50 770 ha), with approx. 40% of these located in the IRM zone. CF concludes approx. 20 000 of this may be merchantable. When combined with the 5 832 ha of subalpine fir that should not have been deducted, CF estimates this represents a potential 4% increase to the THLB in the short term (rationale, 14-15) CF accepts some harvesting has been occurring in PFT's and that some stands could become economically operable (rationale, 15).

◆ Quality (Deciduous)	All deciduous forest types completely deducted from the THLB (app 36 000 ha), almost half of which are in the VQO zone. Approx. 1 000 ha are managed stands and should not have been deducted. Deciduous component of coniferous leading stands excluded during yield curve creation. District staff estimate 70% of stands are non-merchantable. Little harvesting in these types to date. (rationale, 13-14)
◆ Older Forests	Base case includes older forest requirement of 50% of the riparian zone (3% of THLB) having stands older than 120 years and 35% of the winter range zone (5% of THLB) being maintained with stands older than 100 years. The *Interim Regional Timber Harvesting Guidelines* contain an objective of maintaining 12% of the landscape in an old growth condition. Sensitivity tests of removing the base case constraints (relaxation) and of adding a constraint that 10% of stands in all other zones must be greater than 140 years (increase). The 10% was chosen because a portion of the 12% objective may be met by forests outside the THLB. Short term insensitive to either. Relaxation: (removal of base case constraints) **Highly sensitive**, given the affected zones comprise only 8% of the THLB. Initial harvest level can be maintained for 11 decades (4 longer than the base case). Harvest level is 2-3% above base case thereafter. Increase: (add requirement of 10% of stands must be >140 yrs in Sutherland & IRM zones, 64% of the THLB) **Moderately sensitive**. Depending on the chosen harvest flow objective, can either shorten time until fall down or deepen mid term shortfall in comparison to base case. LTHL about 6% below base case in either event.
◆ Min. Harvest Ages	Minimum harvesting ages are based on the age when the stand of trees reaching the minimum utilization standards. The minimum age for pine on good sites has dropped below 60 yrs in TSR II. The focus of the Enhanced Forest projects will be to increase the amount of stands which meets this requirement in the mid term age class gaps.
◆ Silvicultural Systems	Mostly clearcut. 100% of areas are planted with a regeneration delay of 2-3 years. Partial cutting is increasingly being used in riparian areas. CF expects selection systems will play an increasingly important role and expects district staff to examine the use of alternative silvicultural systems with a view to understanding the short- to long-term timber supply implications (rationale 23-24).
◆ Estimates of Timber Volumes	VDYP used for existing stands >20yrs. TIPSY used for regenerated stands and existing stands 20 years and under. Given the same site productivity, managed stands are expected to yield 20% more volume than natural stands (rationale, 21). OAF1 – 15%, OAF2 – 5%. *Existing stand volumes*: Sensitivity test for ± 10% in volume. Long term insensitive. Increase: (+10%) Moderately sensitive in short and mid term. Increases volumes in 1st 5 decades by 8% followed by a drop to essentially the LTHL, **virtually eliminating the mid term shortfall of the base case** (visual estimate from charts). Decrease: (-10%) Causes a drop to the mid term shortfall level 4 decades earlier than the base case (3 vs. 7). Otherwise insensitive. *Regenerated stand volumes*: Sensitivity tests for ± 25% in volume. Short term insensitive to either. **Highly sensitive to both in long term**. Increase: (+25%) Initial harvest level maintained for 14 decades, 7 longer than base case (**eliminates mid term shortfall**). LTHL 24% higher than base case. Decrease: (-25%) LTHL 25% lower than base case.
◆ Site Productivity	Recent studies indicate site indices for managed Pl stands may be underestimated by 22% (SI 20.1 m revised vs.15.6 m current). In addition to the direct growth impact this

	may have on timber supply, this can also indirectly affect timber supply by lowering the min. harvest ages of medium and poor site pine (from 90 and 120 yrs respectively to 60 yrs) and lowering green-up ages by 2 to 4 years. The cumulative effect of a site index increase in the IRM zone only is estimated to be **a 16% increase in initial harvest levels** because the large amount of existing mature growing stock can be harvested at a higher rate (rationale, 20). **The long term increase is 49%** (analysis, 39; this is more likely about 45% when SBPS biogeoclimatic zone is excluded - see rationale, 2039). **This increase in site index is included as base case for TSR II.**
♦ AAC Determination	• The CF is in the process of determining the AAC for the Lakes District.

Summary of TSR Issues by Period

Issues Generally Not Addressed

The following issues were generally not addressed in the timber supply analysis or chief forester's rationale:

1. Age class gaps.

There are two age class gaps in the 30-50 and the 90-100 year ranges. The 90-100 year gap likely can be covered by the large quantity of existing mature timber. The 30-50 year gap is more problematic and likely has a significant role in the possibility of creating a mid term shortfall in timber supply. In the harvest queue, this age range falls immediately before the regenerated stands. Incremental silviculture practices such as fertilization and commercial thinning may offer the potential to mitigate the AAC effects of the 30-50 year age range gap. With both Mountain Pine Beetle and Spruce Beetle attacking stands greater than 100 years of age throughout the district, it looks increasingly doubtful if it is possible to hold in reserve older age classes for harvesting at a later time period.

2. Rehabilitation of PFT's, deciduous stands and low site productivity stands.

A total of approximately 142,000 ha of PFT's, deciduous stands and low-site stands are removed from the THLB. Of this, district staff estimate roughly 42,000 ha have potential for rehabilitation or merchantability. This treatable area is equivalent to 7% of the existing THLB.

These areas presents an opportunity for a partitioned AAC which, given the right economic and market circumstances and in combination with an incremental silviculture rehabilitation program, could partially offset AAC reductions that can be anticipated.

3. Accelerating the harvest of older pine to prevent losses.

Short Term (1-20 yrs)

The current harvest rate is highly stable. Removal or salvage of infested "beetle attacked trees is likely to comprise the harvest volumes scheduled for the next ten years.

Short term harvest rates may increase dramatically as a result of reclassification of site productivity, having the potential to immediately increase harvests 16-25%. This reclassification is the base case of TSR II.

In conclusion, there is little, if any, need for incremental silviculture to maintain timber supply in the short term. However, there may be a need to initiate programs which will enable the increase of short term harvests to capture older pine volumes before they deteriorate or are lost entirely. This can be done actively through initiating incremental silviculture programs targeted to increasing existing stand volumes.

Mid Term (21 - approx. 150 yrs)
Silviculture actions such as increasing regenerated stand volumes, fertilizing existing stands to increase their volumes, and commercial thinning may have potential to reduce or eliminate any effect from the age class gap.

The preliminary reports from TSR II analysis suggests that there is unlikely to be a shortfall in the midterm because of the site index reclassification.

Long Term (approx. 151+ yrs)
The long term exhibits sensitivity to changes in regenerated stand volumes. For every 1% increase or decrease in volume, there is a corresponding approximate 1% increase or decrease in the LTHL.

In conclusion, there is a potential to use alternative silvicultural systems as well as commercial thinning in suitable stands in visually sensitive areas and areas with extensive wildlife use, which are alternatives to relaxing constraints but which should give the same increase in harvest levels as indicated in the analysis when the constraints were relaxed. Similarly, accelerating the growth of trees so that the characteristics of older forests are achieved sooner could help offset a volume reduction associated with the broad implementation of the region's older forest constraint.

Issues Highlighted

The most recent Timber Supply Review (TSR), completed in 1994, found that for the most part, the Lakes TSA has a "robust" timber supply. Recently, however, the Mountain Pine Beetle (MPB) epidemic, particularly in the southeast portion of the TSA have made this forest health issue the most critical concern in the District. Failure to act in an expedient manner to curb this epidemic will result in a severe risk to timber supply within the TSA. For the year 2000-2001, over 80% of the districts AAC will be salvaging beetle infested stands with this level expected to rise to 150% for the year 2001-2002. In this year, an epidemic level of Spruce Beetle has occurred in the mid and northern part of district. The expected salvage rate for spruce beetle is about 750,000 cubic metres per year for the next three years.

Another forest health issue that is having a major impact on activities within the District are Lodgepole Pine stem rusts (commandra, western gall rust, stalactiform). In the past, +/- 2,000 ha/year of immature stands have been spaced within the TSA. Because of the rust concerns, the District has reduced the juvenile spacing program to fewer than 250 ha/year. In the 2000-2001 year of operations, no juvenile spacing was carried out.

2.3.3 Opportunities to Increase Timber Supply

With the Mountain Pine Beetle and Hard Pine Rust infestations reaching epidemic levels, issues and opportunities associated with maintaining or improving the health, vigor and vitality of the forested land base overshadow those of silviculture. Strategies to address these forest health issues include:

- Completing overview flights of pine and spruce stands within the TSA yearly using fixed and rotary wing aircraft.
- Carrying out Beetle line transects in high hazard types to find green attack.
- Completing ground surveys and/or including affected areas in harvesting plans, falling and burning, and if necessary, baiting pests.
- In terms of Pine stem rusts, reducing amount of juvenile spacing, gathering inventory information (OIP) and researching other possibilities i.e. rust resistant stock.

Because of the rapid increase in the Mountain Pine Beetle epidemic and the advent of the Spruce Beetle Epidemic in the current year, any strategy to reduce the impacts of the beetle epidemic in the Lakes District will be actively pursued.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
• Short Term (1-20 yrs)	1. Monitor site index adjustments and confirm expected harvest level impacts as predicted in the TSR II data package. 2. Fertilize suitable existing Pl stands 10 years prior to planned harvest to raise existing stand volumes.	Increase short term harvest levels 10% (net of other downward influences). Enables earlier harvest of older Pl stands.
• Mid Term (21 - approx. 150 yrs)	1. Eliminate backlog NSR. 2. Conduct a spacing/CT/fertilization regime to increase the volume of existing thrifty older immature and young mature stands by 10% and to reduce minimum harvest ages by 10 years. 3. Reduce green-up ages 5 years and minimum harvest ages 5 years by: • using A class seed or better; • using large planting stock; • eliminating voids to reduce TIPSY OAF1 factor. • multiple fertilization of suitable regenerated stands. 4. Salvage harvest/rehab 500 ha/yr. of PFT's or low sites. 5. Rehabilitate pine stands that are now NSR due to hard rust infections	Maintain higher harvest levels achieved in the short term through the mid term. Eliminates mid term shortfall.
• Long Term (approx. 151+ yrs)	1. Increase the volume of regenerated stands 20% by: • using A class seed or better; • using large planting stock; • eliminating voids to reduce TIPSY OAF1 factor; • multiple fertilization of suitable regenerated stands.	Increase LTHL a further 10% over that achieved through the short and mid terms. Captures the productivity associated with higher site indices.

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
• General		
• Spacing		
• Fertilization	A more intensive fertilization program, combined with spacing and commercial thinning programs on suitable stands may: • increase mid term harvests by effectively lowering minimum harvest ages; • increase long term harvests by increasing total volumes.	Large area in lodgepole pine generally responds to fertilization.
• Commercial Thinning	To date no proven performance in CT. Presents an option for increasing mid term harvest levels when combined with other intensive forestry practices.	Approx. 11% of pine forests in the THLB 40-80 years old may be CT candidates.
• Backlog NSR	Less than 400 hectares of backlog NSR to be restocked within 5 years. No additional opportunity.	
• Rehabilitation	Rehabilitation of pine stands that the hard rust epidemic has made NSR. Once backlog program is complete, efforts could carry on to convert/ rehab PFT's, deciduous and low site areas.	Approximately 2000 Hectares of area may need to be treated. 142 000 ha of PFT's, decid, low site.

Working Targets

Important targets for the District in terms of timber supply are:

- Managing the resource to comply with the TSR. The current harvest level can be maintained for 7 decades. In the eighth decade, a 10% decline is projected followed by a 3% decline to a harvest level of 1,310,000 cubic metres per year. This decline is expected to be less with the analysis prepared for TSR II. Increasing and maintaining the timber supply will still be a priority especially when faced with increased beetle salvage operations.
- Stemming the damage caused by MPB.

2.3.4 Opportunities to Improve Timber Quality

Because of the increasing threat to the TSA caused by Hard Pine Rust, the effects of incremental silviculture may compromise the future quality of the timber resource. Fortunately, the Lakes TSA already has a high proportion of high quality stands. Approximately 85% of timber harvested in the TSA is sawlog quality. To maintain this level of timber quality, the District replants with high quality seedlings and minimizes the need to space by ensuring that seedlings are planted to a high standard.

The District plans to increase the supply of quality timber by rehabilitating Problem Forest Types and low site productivity stands, which amount to 7% of the THLB.

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the timber supply review.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
♦ Short Term		
♦ Mid Term	Space, Prune and fertilize the best 1% pure pine stands in the TSA that are not impacted by rust infection.	Produce premium saw logs on approximately 1% of the landbase.
♦ Long Term		

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
♦ Incremental Silviculture		
♦ Spacing		
♦ Commercial Thinning	No CT at time of analysis.	
♦ Pruning		
♦Space/ Prune		
♦Space/ Prune/Fert	As part of the premium saw log program.	Approximately 2500 ha. 50 ha treated per yr.
♦Other		

Working Targets

In terms of timber quality, the District is working to maintain the high proportion of quality timber in the THLB as well as 1% of its AAC coming from premium quality sawlogs.

2.3.5 Lakes Forest District Sustainable Harvest Data

The Tables of Opportunity follow. They describe proposed activities and required funding levels for the TSA.

2.3.5.1 Enhanced Forestry Table

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	400	400	400	400	400	55.00	22000	LOW
Spacing	100	100	100	100	100	450.00	45000	LOW
Pruning	50	50	50	50	50	800.00	40000	LOW
Fertilizing	800	800	800	800	800	400.00	320000	LOW
Other	0	0	0	0	0	0.00	0	
Totals hectares	1350	1350	1350	1350	1350	316.30	427,000	
Planning and prescriptions							0	
Total dollars							427,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0
Pruning	0	0	0	0	0	0.00	0
Other treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0
Non-riparian treatments	0	0	0	0	0	0.00	0
Totals hectares	0	0	0	0	0	0.00	0

Domestic Range

Treatments	0	0	0	0	0	0.00	0

Enhanced Forestry Activities - Management Unit Total

Surveys	400	400	400	400	400	55.00	22,000
Spacing	100	100	100	100	100	450.00	45,000
Pruning	50	50	50	50	50	799.98	40,000
Fertilizing	800	800	800	800	800	400.00	320,000
Other stand tending activities	0	0	0	0	0	0.00	0
Totals hectares	1350	1350	1350	1350	1350	316.29	427,000
Planning and prescriptions							0
Studies funding							0
Total dollars							427,000

These stand activities will only be scheduled if the backlog activities in the following table cannot be completed due to time constraints or if extra funding becomes available.

2.3.5.2 Backlog Program Table

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							0	
Backlog Reforestation								
Surveys	3200	3200	1200	1200	1000	25.00	80000	HIGH
Site preparation	100	100	100	50	0	500.00	50000	HIGH
Planting**	900	900	900	850	800	755.56	680000	HIGHEST
Brushing	500	500	500	250	100	500.00	250000	HIGH
Totals hectares	4700	4700	2700	2350	1900	225.53	1,060,000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total backlog reforestation							1,060,000	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total impeded areas							0	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	3200	3200	1200	1200	1000	25.00	80000	
Site preparation	100	100	100	50	0	499.99	50000	
Planting**	900	900	900	850	800	755.55	680000	
Brushing	500	500	500	250	100	500.00	250000	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	4700	4700	2700	2350	1900	225.53	1060000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							0	
Recommended studies							33,500	
Total backlog program							1,093,500	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

****800 ha is underplanting to stock stands that are now considered NSR because of the amount of Hard Pine Rust infestation in the stand. A non-susceptible and shade tolerant species is underplanted beneath the current trees. This is the highest priority activity.**

2.3.5.3 Performance Measures Based on Activities Planned for 2002/2003

	Performance Measure Inputs	Tree Improve-ment	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	3,500	3,500	1,188	100	500	500	100	50	800	10,238	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	93,275	0	0	0	95,551	13,325	1,625	0	20,800		**224,576**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			100								**100**
1.5	Est. area that will be declared as free growing (ha)			100								**100**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	350	1,190	119	95	1,000	1,305	396	227	144	1,024	
3.3	Est. total full time equivalent positions (FTE)	2	7	1	1	6	7	2	1	1	6	**32**
4.1	**Forest Health Enhancement (ha)***											**800**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

***800 ha will be underplanted due to Hard Pine Rust Infestations. This activity is reflected in the Backlog Table because the area is still considered backlog.**

2.3.5.4 Studies Table

The following studies are also included in the Backlog and Enhanced tables of the RMP under studies and treatments.

Rank	Project Name	FRBC's Cost 2002/2003
1	Operational Trial of Disk Trenching	$8,500
2	Hard Pine Rust Study	$25,000

Project Descriptions by Rank

1. Operational Trial of Disk Trenching: Site preparation is an important tool for improving the success of reforestation following logging. The decision to use site preparation and the choice of treatment depends on management objectives, site and soil characteristics, treatment costs, and expected benefits. Installation of study sites has been staggered over a period of three years (1999-2001) to achieve adequate replication and to incorporate year-to-year variation in precipation and temperature patterns, stock conditions and planting quality. Progres reports will be submitted at the end of each of the three years. Reporting of results will begin in 2003.

2. Hard Pine Rust Study: The first portion of this study is to complete a sample of forest health surveys designed specifically to detect and record the location and distribution of hard pine blister rusts (including Commandra, Stalactiform blister rusts and Western Gull Rust). Analysis will be done on this data to determine (1) the most appropriate siviliculture treatments to prevent catastrophic levels of rust within a plantation, (2) the best treatment to bring a plantation with catastrophic incidence of rusts back to a condition that they may be considered for free growing and (3) the factors that indicate the likelihood of high rust levels in a plantation such as weather conditions, ecosystem type and the presence of host species.

2.3.5.5 Management Unit Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	1,350	1,350	1,350	1,350	1,350	316	427,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	4,700	4,700	2,700	2,350	1,900	226	1,060,000
Planning, prescriptions and seedlings							33,500
Totals	6,050	6,050	4,050	3,700	3,250		1,520,500

Performance Measures

Potential total merchantable volume increment in 65 years	224,576 m^3
Estimated ha that will be reclassified as stocked	100 ha
Estimated ha that will be declared as free growing	100 ha
Estimated total full time equivalent positions generated	32 FTEs
Forest health enhancement area	800 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.3.5.6 Woodlot Program Table

The woodlot program for the Lakes Forest District is based on discussions with the Lakes Woodlot Association and the Woodlot Forester for the District. The following table is based on a three year plan developed by the Association in 2000.

Table of Backlog and Enhanced Forestry Activities

Activities for Enhanced Forestry

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0.00	0
Spacing	0	0	0.00	0
Pruning	0	0	0.00	0
Other	0	0	0.00	0
Totals hectares	0	0	0.00	0
Planning and prescriptions				0
Total dollars				0

Activities for Backlog Program

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	859	925	117.60	101045
Site preparation	0	0	0.00	0
Planting	37	0	493	18241
Brushing	13	0	408.77	5314
Totals hectares	909	925		124,600
Seed purchase	0	0	0	0
Prescriptions and planning dollars				0
Total backlog reforestation				124,600

Enhanced Forestry and Backlog Program Activities - Management Unit Total

Surveys	859	925	117.60	101045
Site preparation	0	0	0.00	0
Planting	37	0	493	18241
Brushing	13	0	408.77	5314
Spacing	0	0	0.00	0
Pruning	0	0	0.00	0
Other	0	0		0
Totals hectares	909	925		124600
Seed purchase	0	0		0
Prescriptions and planning				0
Recommended studies				
Total Program				124,600

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.4 Morice Forest District

2.4.1 Basic Data

The Morice Forest District is within the Morice Timber Supply Area (TSA). Basic data for the Morice TSA includes:

Land Area

Description	Area (ha)	Area (%)
Total Area of TSA	1,498,700	100
Total Productive Crown Forest	1,003,400	67
Net Timber Harvest Land Base (THLB)	634,400	42

Source: 1996 TS analysis report-rounded to nearest 100 ha.

Annual Allowable Cut (AAC)

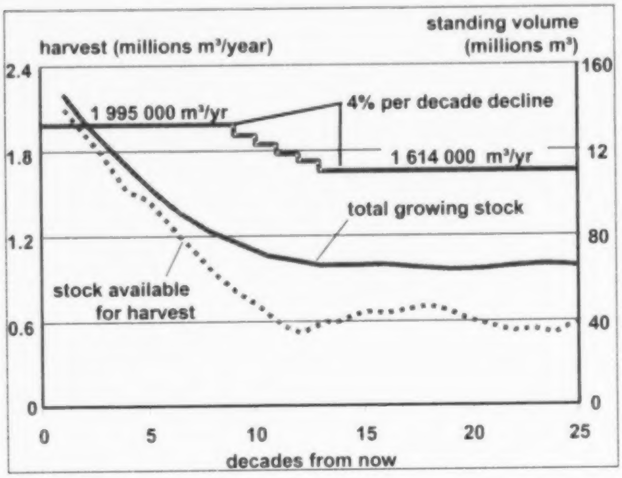
AAC Type	Pre-TSR (m^3)	TSR1* (m^3)	Change (%)
Conventional	1,985,815	1,985,815	0.0
Deciduous			
Insect/Disease			
Marginal			
Total	1,985,815	1,985,815	0.0
Woodlot AAC	Not included in conventional AAC	14,185	

*Effective September 1/96

TSR1 described the AAC division between licensees as follows:

> *Northwood Pulp and Timber is the largest licensee with 53.4% of the total available AAC. Houston Forest Products has the second largest licence at 35.7% and the Small Business Forest Enterprise Program has been allocated 9.3% of the AAC. Forest Service Reserve (0.8%) and other licenses (0.8%) comprise the remaining cut.*

According to the Timber Supply Analysis of February 1996, the AAC for the Morice TSA, excluding a woodlot allocation of 14,185 cubic metres per year which is not considered in the TSR analysis, is 1,995,000 cubic metres per year. The timber supply analysis suggests that the current harvest level of 1,995,000 cubic metres can be maintained for 90 years, followed by a 4% decline per decade for 6 decades to a long-term harvest level of 1,614,000 cubic metres per year (see figure below). This represents a 19% reduction from the current harvest level. As mature stocks are depleted from the inventory, the average harvest age will decline gradually until period 11 when the average age will reach 85 years. The average volume per hectare will follow the same trend and will decrease from 350 cubic metres per hectare to approximately 250 cubic metres per hectare. The harvest forecast is shaped by the current surplus of mature growing stock. Over time, the total growing stock will decline until it reaches an even-flow level of second growth stands becoming available for harvest. The current timber supply forecast does not indicate any shortfall other than the distant transition to the LTHL.



Site Class Profile

The site class profile was estimated using the Morice District Forest Inventory Planning Files.

	Classes (%THLB)				
	undetermined	low	poor	medium	good
Morice TSA	7.9%	1.3%	18.8%	44.0%	28.1%

Age Class

Age Class	(%)
NSR	1
0	2
1-20	12
21-40	1
41-60	2
61-80	11
81-100	7
101-120	9
121-140	14
141-250	36
250+	5
Total	100

Source: TS analysis report

The current age class distribution indicates that 64% of commercial species on the harvesting land base are over 100 years of age.

Tree Species Profile

The most abundant commercial species is lodgepole pine occurring on 54% of the THLB. Spruce and balsam are the secondary species each occurring on 23% of the THLB.

Incremental Silviculture History

Treatment	TSR I Status (1996)	*CURRENT STATUS*

	Incorporated in Timber Supply Analysis	Not Incorporated in Timber Supply Analysis	
◆Backlog	5,300 ha of backlog NSR. Time frame for rehabilitation not specified.		5,592 ha of NSR identified. Approx 2,022 ha can be restocked. TSR I assumed all areas regenerated.
◆Conversion		None indicated.	
◆Commercial Thin		Experimental. 250 ha CT'd in the 2 yrs prior to the analysis.	
◆Space	TIPSY used on stands regenerated over the past 20 years. Assumes incremental spacing for stocking control on stands harvested prior to 1987.	Only a small portion of THLB spaced. One licensee has FRBC funding to assess overstocked Pl for spacing.	Approx 6,500 ha spaced since 1973
◆Prune		None indicated.	688 ha pruned since 1991. All areas pruned were previously spaced.
◆Fertilize		Only a small portion fertilized.	3,246 ha fertilized since 1987. All areas fertilized were previously spaced or spaced and pruned.
◆Space/Prune		Combinations not indicated.	
◆Space Fertilize		“	
◆Space/Prune/Fertilize		“	

2.4.2 Issues

The 1996 Morice Timber Supply Analysis (TSA) and the *Type 1 silviculture strategy* (2000) (http://www.for.gov.bc.ca/hfp/silstrat/index.htm) documents were used to identify TSA issues and land based investment opportunities for the SH component of this RMP.

Presently, there are 32 woodlot licences issued in the Morice TSA. The woodlot AAC contribution is 14,185 cubic metres per year. Woodlot licensees have basic obligations until “Free Growing”. Their silvicultural priorities are similar to District priorities since many of the District issues also affect Woodlot licensees.

Individual Issue Analysis identified from the Timber Supply Analysis

◆ Harvest Forecast	The pre TSR AAC of 1 995 000 m3 (2 000 000 less an assumed woodlot AAC of 5 000 m3) can be maintained for 90 years after which it declines at a rate of 4%/decade to a long term harvest level in 140 years of 1 614 000 m3, 19% lower than the initial level.
◆ Age Class	Approximately 56% of THLB in stands > 120 years old. Very few stands aged 21 to 60 years old.

◆ Forest Cover	*IRM Zone*: 88% of THLB. Base case requirement of at most 25% of THLB permitted to be < 3 m tall (4 pass system). Sensitivity test of ± 1 pass. Relaxation: (3 pass) Insensitive. This requirement was not a limiting factor in the base case. Increase: (5 pass) Short term insensitive. Reduction to LTHL begins 4 decades earlier than base case. LTHL 1.5% higher than base case due to stands having to be harvested at slightly older ages which are closer to culmination age. *Visual Quality & Riparian Zones*: 12% of THLB. Base case requirement of at most 6% (retention VQO), 18% (partial retention VQO) and 28% (modification VQO) to be < 5 m tall. Sensitivity test of ± 10%. Insensitive in short term to either. Relaxation: (+10%) Slightly sensitive mid and long term. Initial harvest levels maintained one decade longer than base case. LTHL 1% higher. Increase: (-10%) Moderately sensitive – Falldown begins 2 decades earlier than base case. LTHL reduced 2%. *Green-up*: Green up ages 14 yrs for 3 m (non-VQ) and 20 - 21 yrs for 5 m (VQ). Sensitivity test of ± 5 years (equivalent to more than a 1 m change in green-up hts). Short term insensitive. Relaxation: (- 5 yrs) Insensitive. LTHL 1% higher. Increase: (+ 5 yrs) **Very sensitive mid term** - initial harvest level can only be maintained for 3 decades (6 less than in the base case). LTHL 2% higher than base case as the extended age at which stands are harvested are closer to culmination ages.
◆ Backlog NSR	5 300 ha of backlog NSR. Time frame in which this is restocked is not given. Assume restocking to be already incorporated in analysis.
◆ Quality	• 44 922 ha of non-merchantable forest types deducted from THLB (all deciduous, Douglas-fir, cedar, hemlock, white pine and yellow pine; all spruce leading mixed with fir and hemlock; lodgepole pine leading with fir mix). This is equivalent to 8% of the THLB. • 175 760 ha of low productivity sites deducted from THLB (balsam with SI < 10 m, spruce with SI < 10.5 m, and lodgepole pine with SI < 12 m). This is equivalent to 30% of the THLB. Industry contends 26 000 ha of low productivity stands near the margin and 25 000 ha of low productivity immature stands should not have been deducted. This constitutes almost 9% of the THLB. Sensitivity analysis indicates the current harvest level can be maintained for 390 years were the THLB increased 15% (presumably based on average sites), indicating considerable long term potential.
◆ Older Forests	Base case does not include a requirement for old growth or biodiversity as there were no specific provisions applied operationally in the TSA at the time of analysis. Relaxation: N/A Increase: (10% of stands of age ≥ 140 yrs). Has a similar effect to decreasing the land base. Current harvest levels can only be maintained for 40 years, 50 less than the base case, and LTHL reduced 9% below base case.
◆ Min. Harvest Ages	Age at which balsam stands attain 200 m3/ha (100 to 150 yrs for existing stands and 70 to 120 yrs for regenerated stands), and spruce (90 to 110 yrs for existing stands and 60 to 90 yrs for regenerated stands) and lodgepole pine (60 to 80 years for existing stands and 50 to 60 years for regenerated stands) stands attain 150 m3/ha.

	71% of THLB above the minimum harvest age. Sensitivity analyses of ± 20 yrs. Decrease: (-20 years) Insensitive. Most stands are harvested in the base case at ages higher than minimums. Thus lowering further has no effect. Increase: (+20 years) Short term insensitive **Mid-term drop commences 5 decades sooner than base case.** LTHL 2% higher than base case as increasing minimum ages results in stands being harvested closer to their culmination age (analysis, 28). (An increase of 30 years would make min ages older than culmination, resulting in a lower LTHL [analysis, 28])
♦ Silvicultural Systems	Most of the THLB is currently managed under a clearcut harvesting system. Some clearcut with reserves and patch cuts. All harvested areas are planted.
♦ Estimates of Timber Volumes	VDYP used for existing stands > 20 years of age. TIPSY used for regenerated stand volumes and existing stands ≤ 20 years of age. *Existing stand volumes*: Some concern regarding older stand volumes being over-estimated, although a comparison between actual harvest volumes and VDYP volumes effectively shows no difference. Sensitivity test for ± 20% in volume. Long term insensitive. Increase: (+20%) Moderately sensitive in mid term only. Current harvest level can be maintained for 160 years (7 decades longer than base case), before falling to base case LTHL. Decrease: (-20%) **Highly sensitive**. Current harvest level only maintained for 1st decade after which harvest levels decline to the same LTHL as in the base case, which is reached 8 decades earlier. *Regenerated stand volumes*: Sensitivity tests for ± 20% in volume. Short term insensitive to either. **Highly sensitive to both in long term**. Increase: (+20%) Current harvest level maintained for at least 250 years. Ultimate LTHL (beyond 250 yrs) 21% higher than base case. Decrease: (-20%) LTHL 17% lower than base case. Transition to LTHL commences 4 decades earlier than the base case.
♦ Site Productivity	**This TSA was the only management unit in which site index adjustments were fully incorporated into the timber supply analysis during the first TSR.** Alone, this results in an 18% increase in LTHL. When combined with managed stand yield curves (from TIPSY), it results in a 42% increase above unmanaged (existing) stand yields (using VDYP). (rationale, 20).
♦ Regen Delay	All harvested areas are planted. Base case regen delays of 4 yrs. Sensitivity test of ± 2 years. Affects both the green-up period (especially in VQO zones) and volumes at harvest. Increase: (+2 yrs) Mid term reduction in harvest levels commences 2 decades earlier than in base case. LTHL 2% below base case. Decrease: (-2 yrs) Insensitive short and mid terms. **Very sensitive in long term.** LTHL 4% higher than base case.
♦ Forest Health	Pests such as the Mountain Pine Beetle, Spruce Bark Beetle, and Western Balsam Bark Beetle are present on some mature stands in the TSA

Summary of TSR Issues by Period

Short Term (1 to 20 years)

The abundance of mature timber and the relatively good operating area of the TSA result in a very stable short term timber supply. Under most scenarios, the current harvest level can be maintained for at least 50 years. The only factor that could possibly result in a lower short term harvest level, and even then only beginning in the second decade, is if existing stand volumes were overestimated by 20%. This is an unlikely scenario, however.

Mid Term (21 to 140 years)
The mid term timber supply is a generally-smooth transition over a span of 5 decades from the current harvest level to the long term harvest level. No sensitivity analysis scenario resulted in a mid term shortfall below the LTHL. Sensitivity tests generally indicated an earlier or later commencement of the mid term. As in the short term, the mid term is highly impacted where existing stand volumes are overestimated. It is also sensitive to factors that, in effect, result in reducing the amount of older timber available, such as the institution of a 10% older forest requirement or a 15% reduction in the land base. A 20% reduction in regenerated stand volumes brings on an earlier commencement of harvest reductions due to the need to stretch existing stands over a longer period. A five year increase in green-up ages brings on the transition to lower long term harvest levels 6 decades earlier than the base case so that it begins after 3 decades.

On the positive impact side, a 20% increase in existing stand volumes (unlikely as a measurement phenomenon, but some increase possible through management) allows current harvest levels to be maintained for 160 years. A 20% increase would enable the current harvest level to be maintained almost indefinitely.

Long Term (141 + years)
As is the case in virtually all management units, the long term is sensitive to changes in regenerated stand volumes. A 20% increase or decrease in regenerated volumes results in a respective 21% increase or 17% decrease to LTHL. A 20% increase would enable the current harvest level to be maintained almost indefinitely.

The long term is also sensitive to increasing harvests in or rehabilitating forests considered non-merchantable or on low productivity sites. Together, this amounts to an area which is equivalent to 38% of the THLB. This would effectively amount to increasing the THLB. Based on the average of all sites, a 15% increase in the THLB would allow the current harvest level to be maintained almost indefinitely.

A 2 year reduction in regeneration delay (from 6 years down to 4) results in a significant 4% increase in LTHL.

Issues Highlighted
The Morice TSA has a strong timber supply situation. Likely, timber supply and quality in the Morice TSA would respond well to a pro-active incremental silviculture program. The nature of the Morice TSA therefore makes it a potential candidate for an increase in AAC that is sustainable for a relatively long period. To confirm this assumption, detailed forest level analyses are needed (Level 2 silviculture analysis).

Individual Issue Analysis identified from the Type 1 Silviculture Strategy

This section summarizes the critical issues that guided the TSA silviculture strategy in January 2000. While many issues were discussed during the development of this strategy, the participants (Industry, MELP and MoF representatives) agreed to address the following key issues:

- Backlog NSR and impeded areas
- Employment
- Habitat
- Potential to increase the THLB
- Lower timber quality expected in regenerated stands

Due to the nature of some issues listed above, it was determined that certain aspects of these issues would be better addressed outside of this RMP. The table below describes the issues addressed as part of the SH component. Please refer to the Morice TSA Type I Silviculture Strategy (http://www.for.gov.bc.ca/hfp/silstrat/index.htm) for further details.

Critical Issues pertinent to the SH component

Issues	Strategies
1 Backlog Areas	
1.1 NSR areas	
Some backlog sites on the timber harvesting land base remain untreated. Sites left with inadequate stocking levels will probably not reach the projected yields used in the timber supply analysis	Restock all treatable backlog NSR over a five-year planning period. Survey the entire area in the first year, site prepare as required (20% of treatable area per year), plant, and brush as required
2 Impeded areas	
Ensure previous investment are protected and achieve free growing status	Survey impeded backlog stands and brush as required
3 Habitat	
3.1 Old seral stands	
There is a perceived shift to less old seral species and more "created" early seral and mid-seral area	Create mature and old seral characteristics in mid-seral stands by accelerating the production of certain attributes (variety of stem sizes, coarse woody debris, species diversity, and large-diameter stems) in areas with high site productivity in plantations and large burns. Identify candidate pilot study areas and prepare prescriptions that specifically address landscape unit requirements. Space or commercial thin, fertilize and prune as required to create required attributes.
4 Stand-level biodiversity	
In stands harvested before the inception of the Forest Practices Code in 1995, wildlife tree patches and riparian areas should be managed for their desired characteristics rather than for timber production	Identify and establish stand-level retention area candidates (future WTPs and riparian areas) and goals in stands regenerating after logging or wildfire. Manage for habitat values rather than crop tree objectives
5 Timber Quality	

Issues	Strategies
Lower timber quality is expected in regenerated stands than in first-growth stands. Management in the Morice TSA should provide for a wide range of forest products, including high quality grades.	On lodgepole pine stands with high site index, produce 5m clear logs with minimum 30 cm diameter as 10% of the volume by planting improved stock at a density to be determined, spacing to 900 sph at 5.5 m top height then pruning to 3.3 m, pruning again to 5.5 m when the top height is 8 m, and fertilizing every 15 years beginning three years after pruning
	On good and medium pine stands, large logs with minimum 30 cm diameter as 10% of the volume by spacing to 1000-1800 sph and fertilizing every 15 years beginning three years after spacing

2.4.3 Opportunities to Increase Timber Supply

Although the Chief Forester considered and rejected the possibility of increasing the AAC, increasing harvest levels above the current level could be considered as a possibility under a silviculture strategy. If a provincial strategy is to maintain current harvest levels then the short term timber supply in some TSAs must go up in order to compensate for those TSAs where little or nothing can be done to prevent a drop. The nature of the Morice TSA (robust timber supply situation) makes it a potential candidate for an increased AAC that is sustainable for a relatively long period.

A potential strategy to accomplish an increase in harvest levels could be to induce an allowable cut effect by increasing long term harvest levels and shifting some of the benefit into increased short term harvests. This would have the added benefit of reducing the risk of losses from fire, pests and decay in the large stock of existing mature timber. Strategies to increase long term harvests include increasing regenerated stand volumes and increasing the timber harvesting land base through rehabilitation of non-merchantable stands and increasing site productivity of some treatable low-site stands. Site rehabilitation and treatment on low productivity stands seems however an unlikely scenario due to the limited information we currently have on these sites.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
◆ Short Term	1. Fertilize suitable thrifty immature stands 10 to 15 years prior to planned harvest. 2. Maintain or improve health of THLB while reducing losses caused by the various damaging agents. Ensure damaging agents do not impede silviculture obligations or investments and protect timber resource. 3. See long term.	A forest level analysis (type 2) will be required to fully assess the potential benefit of a fertilization program. Current literature shows a gain of 12 m³/ha from a single fertilization (N & S) applied at the age of 25 years. Mitigate effect of pests on timber supply and quality.
◆ Mid Term	1. See long term.	Smooth transition to lower LTHL.
◆ Long Term	1. Increase regenerated stand volumes 20% by: • reducing regen delay from 4 yrs to 2 or less	A forest level analysis (type II) will be conducted, in conjunction with the IFPA, to

Response Time Frame	Objective/Action	Anticipated Result
	years by planting immediately following harvesting; • planting large, genetically improved stock; • spacing and multiple fertilization of suitable stands; • managing voids so that TIPSY OAF1 does not exceed 10%.	fully assess the potential benefit on timber supply
	2. Increase the THLB by 15% by rehabilitating a portion of: • non-merchantable forest stands; • low productivity forest stands.	Option 2 is unlikely with current information available.
	3. Commercial Thinning/fertilization	

Potential Treatments and Analysis Results

Treatment	Treatable Area	Comment
• Fertilization	The Morice TSA currently has approximately 12,000 ha of unmanaged Age class 3&4 and approx 7,200 ha of age class 1&2 spaced stands. The majority of these areas could be immediate candidate for multiple fertilization. In addition, there is approximately 4,700 ha of identified age class 1 & 2 candidate stands for spacing.	54% of THLB is Pl, a species which responds to fertilization. Over 25% of THLB is in thrifty immature age classes and may be candidates.
• Spacing	Approx. 4,700 ha of identified age class 1 & 2 candidate stands for spacing. Approx. 1,650 ha currently under prescription.	Benefit from spacing will come from making stands available for commercial thinning and by creating the right conditions for fertilization treatments. Follow up treatments to spacing are necessary to ensure potential timber supply increase and financial return.
• Commercial Thinning	Unmanaged age class 1 & 2 can be set up for CT candidate through pre-commercial thinning treatment. 12,000 ha of unmanaged age class 3&4 leading Lodgepole pine stands could be candidate for CT. 11% of THLB aged 61 to 80 years and may be candidates. Approx. 5,500 ha of identified age class 1&2 stands could be set up for CT. Approx. 1,875 ha currently under prescription.	Specific regimes will be determined through a detailed forest level analyses (Type II), being completed in conjunction with the IFPA.
• Rehabilitation		Equivalent of 38% of THLB deducted as non-merch or low productivity. Current information indicates low potential for

Treatment	Treatable Area	Comment
		treatment.
• Backlog NSR	TSR 1 assumed that all NSR to be restocked. The current data indicate 976 ha of NSR of which approx 330 ha can be restocked. Fill planting on marginally stocked stands will help reduce OAF 1 to less than 10%.	All areas were assumed rehabilitated in the timber supply analysis (TSR I). NSR backlog planting will act as maintaining the current AAC rather than increasing the long term harvest.

Working Targets

Maintenance activities (backlog reforestation)

Ensure basic legal obligations and plantation maintenance activities are addressed as the **highest priority**.

Working Target 1:

Maintain the LTHL by ensuring that previous plantations are protected and regenerated stand volume is not compromised.

Strategies to meet Working Target 1:

A. Conduct an *accelerated* stocking/free growing assessment to maintain up to date information on land status and brushing treatment needs. Prepare a treatment prescription immediately after the survey season for every site proposed for brushing treatment.

B. Conduct brushing treatments on high risk stands to ensure that existing plantations remain Satisfactorily Restocked (SR) and achieve free growing status by the year 2010.

C. When possible and economically viable, implement stand improvement treatments (brushing treatment) that will increase the number of free growing stems on marginally free growing stands to produce higher volume stands.

Working Target 2:

Increase productive area by rehabilitation and reforestation of sites currently classified as **NSR** to maintain the LTHL.

Strategies to meet Working Target 2:

A. Conduct an *accelerated* stocking assessment program to maintain up to date information on land status and site preparation and planting treatment needs. Attempt to prepare a backlog SP or a planting prescription immediately after the survey season for every site proposed for planting or fill planting.

B. For Backlog areas disturbed between January 1, 1982, to September 30, 1987, establish baseline information upon which to rank areas for treatment, and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good, Medium, and Poor** sites by the year 2002.

C. For Backlog areas disturbed before January 1, 1982, identify **Good and Medium** sites first, then Poor and Low sites, and confirm that indicated site productivity is correct. Establish baseline information upon which to rank areas for treatment and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good and Medium** sites by the year 2002.

The following areas should **NOT** be scheduled for planting:

C.1. Areas where the average age of well-spaced stems is less than 12 years and stocking exceeds existing minimums for the ecosystem association (Reference: *Establishment to Free Growing Guidebook*).

C.2. Areas where the average age of well-spaced stems is 12 years or greater and the number of well-spaced stems is 60% of the Guidebook minimum's. This is a guideline only. Each block should be individually considered before applying this reduced stocking standard.

C.3. Areas coded as inoperable or environmentally sensitive.

D. Use 'A' class seed or better and large planting stock in order to increase regeneration stand volume and minimize future brushing treatment.

E. Do not reforest if the cumulative cost of all brushing treatments is estimated to exceed $1500 per hectare.

2.4.4 Opportunities to Improve Timber Quality

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the last timber supply review. Premium logs will be available in the short and mid terms due to the large proportion of old forest in the Morice TSA. The future decrease in log quality was identified as a critical issue in the *Type 1 Silviculture Strategy* (2000). Interim timber quality objectives have been identified to provide direction for the development of density management prescriptions. Detailed density regimes and outputs analysis will be developed in more detailed silviculture planning exercises (IFPA, Type 2 analysis).

A general objective for the District is to maintain the amount of quality timber available by implementing the treatments listed in the following table.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
◆ Short Term	None	
◆ Mid Term	Space/Prune 100 ha/year of up to 5 m log until funding becomes available to reach 500-600 ha per year to meet provincial objectives. Space and multiple fertilize to produce large diameter logs. Manage for clear timber through long rotation	
◆ Long Term	As above	

Working Targets

Incremental activities

Working Target 3:

Carry out a wide range of silviculture treatments that will provide a *diversified portfolio of forest products and conditions* in order to minimize risk and better respond to future market conditions. Ensure the development of regimes that will increase the regenerated stand volumes to minimize the *mid term*[1] *provincial shortfall* and attempt to maintain the current AAC as the LTHL in the Morice TSA. Attempt to increase the overall log quality.

Strategies to meet Working Target 3:

A. Develop a series of density management regimes to ensure a wide range of densities, forest conditions and habitats are maintained over the landscape. These regimes may include juvenile spacing, fertilization, pruning, commercial thinning and no-treatment options. Until such specific regimes are developed, the *interim strategy* is to produce stand density management prescriptions that will maximize piece size without compromising the total volume production and that will leave opportunities for fertilization and commercial thinning.

B. Implement various regimes of density control that will maximize MAI, volume and piece size in age class 1 & 2 stands.

C. Set up stands for commercial thinning using density control treatments in order to provide interim harvest without reducing the potential of the residual stand.

D. Implement a fertilization program targeting previously spaced age class 3 & 4 pine stands and thrifty immature untreated pine stands with favorable live crown size and vigor and also fertilizing younger stands with room for crown expansion.

E. When biologically and economically feasible, treat suppressed age class 3 & 4 pine stands classified as low productivity sites. Treatment options should include spacing, mechanical spacing with salvage or site rehabilitation.

F. Investigate options for rehabilitation of non-merchantable forest stands.

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[1] The mid term timber supply is a generally-smooth transition over a span of 5 decades from the current harvest level to the long term harvest level. The mid term is characterized by a decline in AAC at a rate of 4%/decade to a long term harvest level in 140 years of 1 614 000 m3, 19% lower than the initial level.

2.4.5 Morice Forest District Sustainable Harvest Data

2.4.5.1 Enhanced Forestry Table

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Spacing	800	800	500	500	0	600.00	480000	6
Pruning	300	300	300	300	0	750.00	225000	7
Fertilizing	1600	800	1200	1200	0	300.00	480000	8
Other	0	0	0	0	0	0.00	0	
Totals hectares	2700	1900	2000	2000	0	438.89	1,185,000	
Planning and prescriptions							30,000	5
Total dollars							1,215,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Domestic Range

Treatments	0	0	0	0	0	0.00	0	

Enhanced Forestry Activities - Management Unit Total

Surveys	0	0	0	0	0	0.00	0	
Spacing	800	800	500	500	0	600.00	480,000	
Pruning	300	300	300	300	0	750.00	225,000	
Fertilizing	1600	800	1,200	1,200	0	300.00	480,000	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	2700	1900	2000	2000	0	438.89	1,185,000	
Planning and prescriptions							30,000	
Studies funding							153440	
Total dollars							1,368,440	

2.4.5.2 Backlog Program Table

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							0	
Backlog Reforestation								
Surveys	0	0	0	0	0	0.00	0	
Site preparation	100	100	100	100	0	1,200.00	120000	2
Planting	300	300	300	300	0	1,040.00	312000	1
Brushing	0	0	0	0	0	0.00	0	
Totals hectares	400	400	400	400	0	1,079.99	432,000	
Seed purchase	300	300	0	0	0	448.00	134,400	1
Prescriptions and planning dollars							0	
Total backlog reforestation							566,400	
Impeded areas								
Surveys	7000	7000	7000	7000	0	30.00	210000	5
Brushing	350	350	350	350	0	550.00	192500	4
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	7350	7350	7350	7350	0	54.76	402,500	
Prescriptions and planning dollars							30,000	5
Total impeded areas							432,500	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	7000	7000	7000	7000	0	30.00	210000	
Site preparation	100	100	100	100	0	1,199.98	120000	
Planting	300	300	300	300	0	1,039.99	312000	
Brushing	350	350	350	350	0	550.00	192500	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	7750	7750	7750	7750	0	107.68	834500	
Seed purchase	300	300	0	0	0	448.00	134400	
Prescriptions and planning							30,000	
Recommended studies							0	
Total backlog program							998,900	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.4.5.3 Performance Measures Based on Activities Planned for 2002/2003

	Performance Measure Inputs	Tree Improve-ment	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	300	300	2,310	100	300	350	800	300	1,600	6,360	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	7,995	0	0	0	57,331	9,328	13,000	0	41,600		**129,253**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			0								**0**
1.5	Est. area that will be declared as free growing (ha)			0								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	30	102	231	95	600	914	3,168	1,362	288	636	
3.3	Est. total full time equivalent positions (FTE)	0	1	1	1	3	5	18	8	2	4	**41**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

2.4.5.4 Studies Table

A Study quantifying, assessing and rehabilitating non-productive roads and landings was initiated under Babine Forest Products EFMPP and Houston Forest Products. Should this project continue to be funded, the estimated budget is as follows:

2002/03	$153,440
2003/04	$153,440
2004/05	$149,500
2005/06	$124,000

2.4.5.5 Morice Forest District Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	2,700	1,900	2,000	2,000	0	439	1,185,000
Planning, prescriptions and seedlings							183,440
Backlog Program Field Activities	7,750	0	0	0	0	108	834,500
Planning, prescriptions and seedlings							164,400
Totals	10,450	1,900	2,000	2,000	0		2,367,340

Performance Measures	
Potential total merchantable volume increment in 65 years	129,253 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	41 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.4.5.6 Woodlot Program Table

The woodlot program for the Morice Forest District is based on discussions with the Morice Woodlot Association and the Woodlot Forester for the District. The following table is based on a three year plan developed by the Association in 2000.

Table of Backlog and Enhanced Forestry Activities

Activities for Enhanced Forestry

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0.00	0
Spacing	25	0	770.00	19250
Pruning	0	0	0.00	0
Other	0	0	0.00	0
Totals hectares	25	0		19,250
Planning and prescriptions				700
Total dollars				19,950

Activities for Backlog Program

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	0	10	0.00	0
Site preparation	76	0	938.18	71302
Planting	0	111	0.00	0
Brushing	131	30	771.76	101101
Totals hectares	207	151		172,403
Seed purchase	0	177120	0.00	0
Prescriptions and planning dollars				
Total backlog reforestation				172,403

Enhanced Forestry and Backlog Program Activities - Management Unit Total

Surveys	0	10	0.00	0
Site preparation	76	0	938.18	71302
Planting	0	111	0.00	0
Brushing	131	30	771.76	101101
Spacing	25	0	770.00	19250
Pruning	0	0	0.00	0
Other	0	0		0
Totals hectares	232	151		191653
Seed purchase	0	177120	0.00	0
Prescriptions and planning				700
Recommended studies				
Total Program				192,353

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.5 Bulkley-Cassiar Forest District

2.5.1 Basic Data

The Bulkley-Cassiar Forest District includes the Bulkley TSA and the Cassiar TSA. Basic data follows.

Land Area

	Bulkley TSA*		Cassiar TSA**	
Description	Area (ha)	Area (%)	Area (ha)	Area (%)
Total Area of TSA	762,540	100	14,800,323	100
Total Productive Crown Forest	495,922	65	3,708,494	25
Net Timber Harvest Land Base (THLB)	339,874	45	185,637	1.3

Source:
*Bulkley Timber Supply Area Analysis Report 2001.
** Cassiar Timber Supply Area Analysis Report 2001.

Annual Allowable Cut (AAC)

AAC Type	Conventional (m^3)	Deciduous (m^3)	Insect/Disease (m^3)	Marginal (m^3)	Total	Woodlot AAC
Bulkley TSA (pre-TSR1)	895,000			0	895,000	n/a
Bulkley TSA (TSR1)	528,000			367,000	895,000	13,000
Change (%)	-41.0			∞	0	∞
Cassiar TSA (pre-TSR1)	140,000				140,000	n/a
Cassiar TSA (TSR1)	400,000 (only 135,000 apportioned)				400,000	n/a
Change (%)	+186%				+186%	

Bulkley TSA

According to the Bulkley Land and Resource Management Plan (1998), the AAC is allocated as follows: 48.5% between Skeena Cellulose and Pacific Inland Resources (PIR), 21.0% to the Small Business Forest Enterprise Program (SBFEP) and 27.4% to temporary licences.

Under current management assumptions, the second Timber Supply Review (TSR 2) indicates that the current harvest level of 882,000 cubic metres per year (after accounting for the woodlot licences issued since the last determination) can be maintained for another 10 years without causing a sharp drop in future harvest levels below the long-term level. Beginning 10 years from now, the harvests must decrease 10% per decade until the long-term harvest level of 554,945 cubic metres per year is reached, 50 years from now.

Cassiar TSA

With reference to an August 7, 1997 Minister of Forests News Release, the Cassiar AAC is apportioned as follows: 58.4% to non-replaceable forest licenses, 29.6% to the value-added SBFEP, 1.9% to the SBFEP, and 10.1% to Forest Service Reserve (i.e. unallocated).

The 2001 Timber Supply Analysis Report indicates that, based on current inventory, growth and yield information and current management assumptions, timber harvests in the Cassiar TSA could be maintained at 400,000 cubic metres per year over the long term.

Site Class Profile

	Classes* (%THLB)		
	poor	medium	good
Bulkley TSA	15%	61%	24%
Cassiar TSA	69%	26%	6%

*Based on Bulkley and Cassiar Timber Supply Analysis Review (2001)

Age Class

Bulkley TSA*		Cassiar TSA**	
Age Class	(%)	Age Class	(%)
0-20	12	0-15	.5
21-100	13	16-140	59.5
101-250	44	140+	40
250+	31		
Total	100	Total	100

*Based on Bulkley Timber Supply Analysis Review (2001)

**Based on Cassiar Timber Supply Analysis Review (2001). Age class of THLB.

In the Bulkley TSA, approximately half the forest area is over 200 years old, consisting of slow-growing, high-volume stands. The other half is reasonably well-distributed across the younger age classes (Bulkley LRMP, 1998).

In the Cassiar TSA, coastal forests are comprised primarily of high-volume slow growing older stands, while interior forests tend to be comprised of younger age classes. This trend is linked to fire history characteristics of coastal versus interior biogeoclimatic zones.

Tree Species Profile

The species composition (by volume) of the Bulkley TSA Timber Harvesting Land Base is 26% spruce, 18% lodgepole pine , 45% balsam and 10% hemlock. For the Cassiar TSA, species composition is 21% spruce, 13% balsam, 37% hemlock, and 29% pine.

Incremental Silviculture History

Incremental Silviculture in the Bulkley TSA first occurred in 1981, but it was not until 1991, that it began in earnest. Over the past 8 years, an average of 400 hectares per year of juvenile spacing and 100 hectares per year of pruning has been done in the TSA, mostly on young Pine stands.

2.5.2 Issues

The following section addresses proposed activities in Bulkley TSA. Silviculture priorities and strategies are still being developed for Cassiar TSA.

Plans and policies applicable to Bulkley TSA include the Bulkley LRMP, Bulkley Resource Management Zone Higher Level Plan Objectives, the Bulkley Landscape Unit Plan Biodiversity Objectives, the Bulkley Landscape Unit Objectives, the Bulkley Silviculture Strategy, and the Draft Bulkley Forest Health Strategy. They have been reviewed for commitments, recommendations and opportunities that will address issues and investment needs that are applicable to this RMP for the land based programs.

Presently, there are 16 woodlot licences issued in the Bulkley TSA. The woodlot AAC contribution is 13,000 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees. The following summary of management issues for the Bulkley TSA are from the recently completed Incremental Silviculture Strategy (2000).

Individual Issue Analysis

Harvest Forecast	**Significant falldown of 53%.** The present AAC of 895 000 m^3/yr can be maintained for 2 decades, falling thereafter by 9%/decade to a LTHL of 424,000 m^3/yr 90 years from now. The present TSA total growing stock volume of 65 million m^3 declines over a 90-year period to a long term level of approx. 30 million m^3. Thereafter, growth matches the harvest rate. (analysis, 16)
Backlog NSR	296 ha backlog NSR considered inoperable. 865 ha of operable NSR assumed to be restocked within 5 years.
Quality	Approximately 88 100 ha of non-merchantable forest (low site, deciduous, small trees on poor sites, poor stocking) completely removed from the THLB. These are not addressed further in analysis or rationale. The IRM zone is subdivided into 5 quality classes: spruce sawlog, pine sawlog, balsam sawlog (taller one-third of balsam stands), balsam marginal, and hemlock pulplog. A harvest forecast from the sawlog-only landbase indicates an initial harvest level of 598 000 m^3/yr (8% below the currently licensed harvest of 650 000, excluding temporary licences), falling to a LTHL of 296 000 m^3/yr (54% below current licences and 30% below base case). (analysis, 20) Recent actual consumption of marginal sawlog and pulplog stands amounts to 13% of the harvested volume, vs. 39% of the available inventory and 53% of the harvest in the timber supply forecast. (analysis, 21) Chief forester creates partitioned AAC of 367 000 m^3 for marginal sawlog and pulplog stands to ensure harvest profile is consistent with the inventory profile (rationale, 23).
Timber Supply	Maintain or enhance the long-term security of timber supply.
Enhanced Timber Development (ETD) Area	Intensively manage the timber resource.
Older Forests	No base case requirement for the IRM zone. Riparian and VQO & Riparian require at least 70% to be 80+ years; community forest requires 40% to be 100+ years; Babine and Grizzly require 30% and 50% respectively to be 140+ years. Sensitivity tests ± 10% of area and ± 10 of age.

	Relaxation: (-10% area) Insensitive. Increase: (+10% area) Insensitive in short term. Slight sensitivity mid and long term. Mid term harvests decline more rapidly than base case to a LTHL 2.5% lower than base case. Relaxation: (-10 years) Insensitive. Increase: (+10 years) Insensitive in short and mid term. LTHL 1% lower than base case.
Min. Harvest Ages	Age at which stands reach specified minimum diameter (typically 25-29 cm) and volume (typically 150 - 200 m3/ha) requirements. Ages range from 67 yrs on good balsam sawlog sites to 161 years on marginal sawlog sites. Average age about 95 yrs (analysis, 12). Sensitivity test ± 20 years, which is approx. equivalent to varying min vol requirements by 50 m3/ha and avg. dia by 2 cm. Given the magnitude of the age change (± 20 years on many min ages which are 70 - 120 yrs, except those for marginal stands which are often near 160 yrs), the response to changes is relatively minor. Decrease: (-20 years) Initial harvest rate extended 2 decades longer than the base case (from 2 to 4). Mid term harvests decline more rapidly than base case to a LTHL 5% lower than base case. The lower LTHL is due to harvesting many existing stands below their culmination age. Harvest ages would ultimately recover to near culmination in future rotations of managed stands but this is beyond the planning horizon. (analysis, 25) Increase: (+20 years) Falldown commences after the 1st decade. Harvest levels drop at a faster rate than the base case, reaching a 1% lower LTHL 2 decades earlier than base case (70 yrs vs 90 yrs).
Silvicultural Systems	Clearcutting assumed in base case. Some areas are planned using alternative systems such as patch retention, wildlife tree retention, single tree selection and overstory removal. In most cases the remaining trees will contribute to the next crop. (rationale, 15)
Estimates of Timber Volumes	VDYP used for existing and regenerated stands. Regenerated stand volumes increased 5% on the basis of assumed fuller stocking. *Existing stand volumes*: District staff feel volume estimates are close to actual. (Since the analysis, an inventory audit has found no statistical difference between audit volume and inventory volume estimates.) Sensitivity test ± 10%. Long term insensitive. Increase: (+10%) Moderately sensitive, maintaining the initial harvest level 2 decades longer. Decrease: (-10%) **Very sensitive**, decreasing the initial harvest level 11% below the base case. *Regenerated stand volumes*: District staff feel growing potential considerably greater than indicated. Sensitivity tests for ± 25% in volume. Insensitive over first 80 years. Increase: **Long term harvest levels 26% above base**. Mid term shortfall of 490 000 m3 occurs in decades 9 through 14. Decrease: (-25%) Mid term transition to LTHL continues for 3 decades longer than base case arriving at a LTHL 28% below base case after 12 decades.
Regenera-tion Delay	All areas are planted within 1-2 years. A regeneration delay of 4 years was used in the base case analysis. Sensitivity tests of decreasing regen delay to 0 and increasing it to 10 years. Short and mid terms insensitive to either.

	Increase: (to 10 years) Moderately sensitive in LTHL (reduced 5% below base case).
	Decrease: (to 0 years) Moderately sensitive. LTHL increased 6% above base case. Decreasing regen delay also reduces green-up times but harvest flow is not sensitive to a reduction in green-up time (analysis, 31).
Landscape Corridors	Protect and enhance biodiversity and wildlife habitat, protect forest health and maintain 70% of forests' structure and function.
Biodiversity	Maintain the natural composition of conifers and deciduous species across the landscape unit through time (short, mid and long terms).
Grizzly Bear Habitat	Avoid human-bear conflicts and maintain high value grizzly bear habitat.
Forest Health	Maintain health and productivity of the timber resource.

Summary of TSR Issues by Period

Short Term (1 to 20 years)

The most significant issue in the short term is the harvest profile not matching the inventory profile. This is a timber management issue rather than a silviculture issue and was addressed by the chief forester creating a partitioned AAC for marginal stands.

The short term is very sensitive to an increase in forest cover constraints to a 5-pass system in the IRM zone. However, such an increase does not appear likely. The short term is also sensitive to a 10% decrease in existing stand volumes. However, this does not appear to be the case, as an inventory audit has found no statistical difference between audit and inventory volume estimates.

Other than the above, the short term does not exhibit any significant sensitivities. There is little opportunity for incremental silvicultural practices to increase short term harvests.

Mid Term (21 to 140 years)

The steady decline in harvest levels over the mid term is largely a classic falldown response, i.e. existing forests have large standing volumes that are replaced by regenerated stands having smaller trees. The TSA total growing stock volume falls over a 90-year period from 65 to 30 million cubic metres as the forest is transformed from approximately half of the THLB being in forests over 200 years old to only 7%. Average harvested volume/ha declines from approx. 325 m^3 from existing stands to a long term average of 200 - 250 m^3 from planted stands (analysis, 18).

The steady decline is largely insensitive to constraints, varying only slightly in aspects such as the steepness of the decline and the timing of its onset or conclusion.

Long Term (141+ years)

The base case long term harvest level is 53% below the pre-TSR AAC. This partially results from the THLB being approximately 20% less than that of the previous timber supply analysis (due to a variety of factors including differences in the criteria used to define inoperable areas (rationale, 14)).

The picture may not be as bleak as first appears, however, as (rationale, 10-12):

- district staff believe site productivity to be underestimated by as much as 25%;
- experience elsewhere has shown that were TIPSY yield curves used for managed stands (vs. VDYP), the LTHL could have been 20-25% higher than the base case;
- increasing regenerated stand volumes through incremental silviculture practices may further increase the yield response;
- reducing regeneration delay from the 4 years used in the analysis to 0 results in a 6% increase in the LTHL; and
- the 88,100 ha of non-merchantable forest deducted from the THLB may at some time in the future present an opportunity to expand the THLB.

The AAC rationale mentions a sensitivity analysis in which regenerated volumes were increased 50% from the base case (25% from TIPSY, 25% from higher site productivity) but does not report the results other than that these did not affect the short term harvest level.

The long term is largely insensitive to changes in forest cover requirements, presenting little opportunity for incremental silviculture to directly or indirectly ease constraints and raise harvest levels. The LTHL rises only 4% if all forest cover constraints, including older forest requirements, are removed (analysis, 32).

In conclusion, there is a significant probability the LTHL will increase in the future due to active as well as passive opportunities to increase the LTHL. While it is highly unlikely that it would ever approach the current harvest levels, it may be possible to raise it to 650,000 cubic metres, the level of AAC without the 245,000 cubic metres of temporary licences.

Future

The LRMP and Forest Practices Code requirements could affect future harvest levels (rationale 19).

2.5.3 Opportunities to Increase Timber Supply

With a significant Fall Down projected to begin in less than 20 years, the District's main silvicultural priority is to mitigate a reduction in the AAC by increasing yield from the harvested area within the TSA.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
♦ Short Term	1. Identify backlog, reclassify as needed, treat remaining backlog. 2. Minimize NRL's of 34,000 m^3/yr due to balsam bark beetle. 3. Minimize NRL's of 3,000 m^3/yr due to pine beetle. 4. Minimize unsalvageable losses due to spruce	Maintain the current harvest level. Mitigate losses due to balsam bark beetle, pine beetle, spruce beetle, tomentosus and stem rust.

Response Time Frame	Objective/Action	Anticipated Result
	beetle.	
	5. Identify location and area affected, quantify losses due to tomentosus.	
	6. Identify location and area affected by rust, mitigate losses.	
◆ Mid Term	7. Increase growth of existing stands shortly before harvest.	Smooth transition to a lower AAC.
	8. Understory retention.	
	9. Expand THLB.	
	10. Increase regenerated stand yields.	
	11. Manage 25% of the annual harvested area for increased yield.	
◆ Long Term	As above.	Increase LTHL from 424,000 to 650,000.

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
◆ Fertilization	Reduce overstocking of mature lodgepole pine stands (stocking class 3 and 4) and shorten rotation by fertilizing to make these stands available sooner for harvest.	Target high elevation 60-yr old balsam (S minor), SI 15+. Target young stands and spaced stands of pine balsam (subalpine fir).
◆ Commercial Thinning	Priority on age classes 2, 3, and 4 stands that exceed 3,000 stems/ha.	Target same areas as above.
◆ Juvenile Spacing	Apply in conjunction with pruning and some fertilizing.	Target 10% of the annual area harvested.
◆ Backlog NSR	Reforest ASAP.	

Working Targets

Working targets in the Bulkley TSA aim to reduce Fall Down by maximizing yield and increase the quality of timber in the TSA.

Reducing Fall Down

The landscape level Timber Supply Fall Down Silviculture objective is to evaluate the timber supply benefit of the treatments, that is the cost of doing the treatment today versus the benefit of increasing the future timber supply. The prime objective is to address timber supply shortages. It is important to recognize that volume targets and costs may be secondary to the achievement of operability within 20-80 years.

The stand level Timber Supply Fall Down Silviculture objective is to place a priority on incremental silviculture treatments on age class 2, 3 and 4 stands that exceed 3,000 stems/ha. All prescriptions must address the fall down window. Good sites will grow into the window more quickly than poorer sites. Prescriptions for stands to be treated must show how they will achieve diameters and volume targets in the key elements of this strategy, within 80 years. Commercial thinning, fertilization, and juvenile spacing are the currently available treatment options to achieve these goals.

2.5.4 Opportunities to Improve Timber Quality

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
• Short Term	Manage 50% of the annual harvested area to achieve sawlog targets in the following table. Manage 10% of the annual harvested area for high quality, high value, 35 cm min. diameter, clear sawlog production.	Maximize Mean Annual Increment (MAI) while maintaining piece size and minimizing harvest age by using Tipsy for TASS to model stands.
• Mid Term	See above.	
• Long Term	Control Species, increase piece size, improve wood quality	More desirable, market niche

Sawlog Targets in the Bulkley TSA

Leading Species	Site Index	Mean Diameter	Volume/ha
Pine	<19	21 cm	275 m^3
Pine	19+	22 cm	325 m^3
Other Conifers	<20	25 cm	400 m^3
Other Conifers	20+	25 cm	450 m^3

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
• Spacing	Apply to achieve product targets.	Effective density between 900 and 3000 stems per ha.
• Commercial Thinning		Effective density between 900 and 3000 stems per ha. Apply in Landscape Corridors.
• Pruning	Apply to achieve product targets.	
• Space/ Prune	Prune (1 lift) at 6 m (top 250 stems)	Stands with a Pine species component greater than 80% and a site index>SI 19. Maximum recommended effective density at free growing on these stands is 5,000 stems/ha.
• Fertilization	Apply to achieve product targets.	Effective density between 900 and 3000 stems per ha.

Working Targets

- **Sawlogs**: Manage 50% of the annual harvested area to maximize mean annual increment while maintaining sawlog target piece size and minimizing rotation.
- **Premium Sawlogs**: Manage 10% of the annual harvested area for premium Pine sawlogs.

- **Increased Yield**: Manage 25% of the annual harvested area for increased yield and produce a variety of products.
- **No Target:** 15% of the annual harvested area will have no product target.

Because the Bulkley TSA will soon receive results from a Type II silviculture analysis, which will produce a table similar to Attachment 9, it was felt that it would be inefficient to approximate the results of this comprehensive analysis.

2.5.5 Bulkley-Cassiar Forest District Sustainable Harvest Data

The silviculture program proposed in this plan is listed in the following five tables. It assumes a steady state of activities and funds over the next five years to reduce fall down, achieve timber volume and quality targets. Funding levels proposed are in keeping with historical activities and funding levels. Woodlot activities for 2001/02 are included in the tables.

2.5.5.1 Enhanced Forestry Table

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Spacing	300	300	300	300	300	760.00	228000	1
Pruning	300	300	300	300	300	861.00	258300	1
Fertilizing	0	500	500	1000	1000	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	600	1100	1100	1600	1600	810.50	486,300	
Planning and prescriptions*							65,000	1
Total dollars							551,300	
Forest Health Enhancement								
Spacing	100	100	100	100	100	2,000.00	200000	1
Pruning	0	0	0	0	0	0.00	0	
Other treatments	100	100	100	100	100	100.00	10000	
Totals hectares	200	200	200	200	200	1,049.99	210,000	
Habitat Supply and Biodiversity Enhancement								
Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	1000	1000	1000	1000	1000	20.00	20000	1
Totals hectares	1000	1000	1000	1000	1000	20.00	20,000	
Domestic Range								
Treatments	0	0	0	0	0	0.00	0	
Enhanced Forestry Activities - Management Unit Total								
Surveys	0	0	0	0	0	0.00	0	
Spacing	400	400	400	400	400	1,070.00	428,000	
Pruning	300	300	300	300	300	861.00	258,300	
Fertilizing	0	500	500	1,000	1,000	0.00	0	
Other stand tending activities	1100	1100	1100	1100	1100	27.27	30000	
Totals hectares	1800	1200	1200	1700	1700	397.94	716,300	
Planning and prescriptions							65,000	
Studies funding							60000	2
Total dollars							841,300	

*LESOP survey

2.5.5.2 Backlog Program Table

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							0	
Backlog Reforestation								
Surveys	2000	2000	2000	2000	2000	19.25	38500	1
Site preparation	0	0	0	0	0	0.00	0	
Planting	25	25	25	25	25	600.00	15000	1
Brushing	150	150	150	150	150	619.68	92952	1
Totals hectares	2175	2175	2175	2175	2175	67.33	146,452	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars*							65,000	1
Total backlog reforestation							211,452	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total impeded areas							0	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	2000	2000	2000	2000	2000	19.25	38500	
Site preparation	0	0	0	0	0	0.00	0	
Planting	25	25	25	25	25	599.93	15000	
Brushing	150	150	150	150	150	619.67	92952	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	2175	2175	2175	2175	2175	67.33	146452	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							65,000	
Recommended studies							0	
Total backlog program							211,452	

Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

*LESOP survey

2.5.5.3 Performance Measures Based on Activities Planned for 2002/2003

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	25	0	660	0	25	150	400	300	0	2,660	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	666	0	0	0	4,778	3,998	6,500	0	0		**15,942**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			100								**100**
1.5	Est. area that will be declared as free growing (ha)			1,500								**1,500**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	1	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	3	0	66	0	50	392	1,584	1,362	0	266	
3.3	Est. total full time equivalent positions (FTE)	0	0	0	0	0	2	9	8	0	1	**21**
4.1	**Forest Health Enhancement (ha)**											**200**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**1,000**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

2.5.5.4 Studies Table

The following studies are also included in the Backlog and Enhanced tables of the RMP under studies and treatments. There are other studies that may be suitable in other years but they have not been included. The studies listed below are recommendations from the Bulkley Silviculture Analysis. Many of the studies are likely to be complete in 2001/2002.

Rank	Project Name	FRBC's Cost 2002/2003
1	Balsam Release / Fertilization Impacts	$20,000
2	Review information required by the Chief Forester to change OAF value in the Timber Supply Analysis	$20,000
3	Review non-contributing types to determine how these can contribute to the future TSA timber supply	$20,000

Project Descriptions by Rank

1.0 Balsam Release/Fertilization Impacts

- Remeasure and provide a three-year summary of the Blunt Fire post-spacing/pre-fertilization balsam release permanent sample plots.
- Remeasure and provide a five-year summary of the post-harvest balsam release permanent sample plots established in various areas in the Bulkley TSA
- Review and summarize the results of other balsam release trials within the province (for example, SX80405 Coppersmith, etc.)
- Review and summarize existing information on impacts, on timber and non-timber values of fertilization as it relates to the Bulkley TSA. This phase of the project must adequately address the numerous fertilization opportunities that currently exist in the Bulkley TSA. A background review and discussion of fertilization impacts on non-timber values, particularly in plantations, is a priority.
- Provide a professional opinion (based on the information available) of the yield response of balsam to such treatments as fertilization, age class two to five spacing, post-harvest retention, etc.
- If necessary recommend further monitoring schemes and data collection, if any, that will lead to a predictable yield response from balsam to treatments like fertilization, age class two to five spacing, post-harvest retention, etc.

2.0 OAFs for Timber Supply Review

- Review and summarize current and past projects completed within the province (for example, Lakes EFMPP, Telkwa Landscape Enhanced Silviculture Opportunities Plan, etc.)
- Co-ordinate with Pacific Inland Resources, a means of obtaining further local OAF 1 field sampling utilizing the provincial sampling methodology during the 2001 silviculture survey season. (Note: Pacific Inland Resources can direct its Forest Renewal survey contractors to provide the successful proponent with some current OAF 1 field data collection. The successful proponent may then compile the data to support local OAF 1 values).

- The target output for this project is a conclusive report that will satisfy the Chief Forester's requirements for utilizing OAF values that deviate from the provincial defaults for future Bulkley TSA timber supply reviews.

3.0 Reviewing Non-Contributing Types

This research project will assist in determining whether forest management opportunities exist in areas currently excluded from the timber harvesting landbase (THL) within the Bulkley TSA. A detailed review of opportunities should be conducted. The intent of this study is to provide information on the ability of these areas to be managed so they can contribute to the future timber harvesting landbase within the Bulkley TSA. Categories currently excluded from the THL in this district include, but are not limited to:

- Non-commercial cover (brush)
- Low productivity sites
- Problem forest types
- Existing roads, trails and landings
- Future roads, trails and landings

The final report should include possible scenarios under which current non-contributing areas can be successfully brought back into the timber harvesting landbase. If possible the final report should describe a ranking method that addresses and evaluates the economic, timber supply and non-economic values related to adding current non-contributing types to the THLB.

2.5.5.5 Bulkley-Cassiar Forest District Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	1,800	1,200	1,200	1,700	1,700	398	716,300
Planning, prescriptions and seedlings							125,000
Backlog Program Field Activities	2,175	2,175	2,175	2,175	2,175	67	146,452
Planning, prescriptions and seedlings							65,000
Totals	3,975	3,375	3,375	3,875	3,875		1,052,752

Performance Measures	
Potential total merchantable volume increment in 65 years	15,942 m^3
Estimated ha that will be reclassified as stocked	100 ha
Estimated ha that will be declared as free growing	1,500 ha
Estimated total full time equivalent positions generated	21 FTEs
Forest health enhancement area	200 ha
Planned area for specific wildlife forage or habitat maintenance	1,000 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.5.5.6 Woodlot Program Table

The woodlot program for the Bulkley-Cassiar Forest District is based on discussions with the Bulkley Woodlot Association and the Woodlot Forester for the District. The following table is based on a three year plan developed by the Association in 2000.

Table of Backlog and Enhanced Forestry Activities

Activities for Enhanced Forestry

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0.00	0
Spacing	50	20	600.00	30000
Pruning	42	0	720.00	30240
Other	0	0	0.00	0
Totals hectares	92	20		60240
Planning and prescriptions				0
Total dollars				60,240

Activities for Backlog Program

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	56	23	57.74	3233
Site preparation	0	0	0	0
Planting	12	0	415.80	4990
Brushing	86	8	412.00	35432
Totals hectares	155	31		43,655
Seed purchase	4200	0	0.15	630
Prescriptions and planning dollars				0
Total backlog reforestation				44,285

Enhanced Forestry and Backlog Program Activities - Management Unit Total

Surveys	56	23	57.74	3233
Site preparation	0	0	542.00	0
Planting	12	0	415.80	4990
Brushing	86	8	412.00	35432
Spacing	50	20	600.00	30000
Pruning	42	0	720.00	30240
Other	0	0		0
Totals hectares	235	51		103,895
Seed purchase	4200	0	0.15	630
Prescriptions and planning				0
Recommended studies				
Total Program				104,525

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.6 Kispiox Forest District

2.6.1 Basic Data

The Kispiox Timber Supply Area (TSA) and the Cranberry TSA are within the Kispiox Forest District. The management issues of both TSAs are similar and District programs do not distinguish between the two areas. All management direction is therefore rolled-up to the District level. Basic data for each TSA includes:

Land Area

Cranberry TSA

Description	Area (ha)	Area (%)
Total Area of TSA	76,800	100
Total Productive Crown Forest	60,400	79
Net Timber Harvest Land Base (THLB)	32,800	43

TSR2 data - rounded to nearest 100 ha

Kispiox TSA

Description	Area (ha)	Area (%)
Total Area of TSA	1,222,600	100
Total Productive Crown Forest	749,800	61
Net Timber Harvest Land Base (THLB)	317,900	26

Source: TS analysis report - rounded to nearest 100 ha.

Annual Allowable Cut (AAC)

Cranberry TSA

AAC Type	Pre-TSR (m^3)	TSR1 (m^3)	TSR2* (m^3)
Conventional	110,000	110,000	110,000
Deciduous			
Insect/Disease			
Marginal			
Total	110,000	110,000	110,000
Woodlot AAC			0

*effective June 1/98

Ninety percent of the AAC for the Cranberry TSA is allocated to one forest licence which is currently held by C GED Forest Products Ltd. The C GED licence, as well as the C GED timber mill in Kitwanga is owned and managed by the Gitwangak band of the Gitxan First Nation. The remaining AAC is allocated to the Small Business Forest Enterprise Program.

The results of the second Timber Supply Review (TSR2) for the Cranberry TSA (1997) suggest that the current harvest level of 110,000 cubic metres per year can be maintained for up to 9 decades followed by a reduction in the harvest level over the subsequent 3 decades to the long-term harvest level of 87,000 cubic metres per year.

Kispiox TSA

AAC Type	Pre-TSR (m^3)	TSR1* (m^3)	Change (%)
Conventional	1,092,611	1,092,611	0.0
Deciduous			
Insect/Disease			
Marginal			
Total	1,092,611	1,092,611	0.0
Woodlot AAC	not included in conventional AAC	7,389	

*effective December 30/96

Four sawmills and one whole log chipping plant are located within the Kispiox Timber Supply Area. These mills are operated by Skeena Cellulose Inc., C GED Forest Products Ltd. (whose woodlands operations are located within the Cranberry TSA), Kispiox Forest Products Ltd. and Kitwanga Lumber Company Ltd.

Under current management assumptions, the first Timber Supply Review (TSR 1) indicates that the current harvest level of 1,100,000 cubic metres per year in the Kispiox TSA can be maintained for 4 decades, followed by a 10% decline per decade for 10 decades to a long-term harvest level of 630,000 cubic metres per year.

Site Class Profile

Classes*	poor	medium/good
Cranberry TSA	36%	64%
Kispiox TSA	73%	27%

Age Class

Age Class	Cranberry (%)	Kispiox (%)
NSR	3	2
0	0	2
1-20	18	12
21-40	6	3
41-140	12	13
141-250	40	30
250+	21	38
Total		100

TSR data

In the Cranberry TSA, about 68% of stands in the timber harvesting land base are at or above the minimum harvestable age. Conversely, approximately 95% of the total volume of standing timber is currently above the minimum harvestable age in the Kispiox TSA.

Tree Species Profile

The species composition in the Kispiox TSA is 1% cedar, 8% pine, 12% spruce, 31% balsam and 47.5% hemlock. The species composition in the Cranberry TSA is 3% aspen/birch, 3% cottonwood, 12% pine, 12% spruce, 12.5% balsam and 58% hemlock.

Incremental Silviculture History

In the past four years, no incremental silviculture has occurred in the Kispiox Forest District. In 1996, approximately 100 ha of pruning occurred. Spacing occurs in conjunction with brushing to maximize efficiency.

2.6.2 Issues

The Kispiox LRMP was approved by Government and declared as a higher level plan under the Forest Practices Code Act of British Columbia in April, 1996. This plan provides strategic direction to a wide range of important values, and reflects the views of many community, government and industry participants. By law, operational forestry plans must be consistent with the objectives and resource management zones within the LRMP. These strategic objectives naturally link to the objectives of FRBC, and are reflected in the Kispiox Forest District and PRFR's RMPs.

Presently, there are 12 woodlot licences issued in the Kispiox TSA. The woodlot AAC contribution is 13,708 cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees.

Individual Issue Analysis

Several issues are reflected in the Kispiox Forest District's resource stewardship priorities that relate to the FRBC Sustainable Harvest program for 2002-2003. These are:

- Consistently reduced funding in the silviculture area, resulting in only a small portion of backlog not-satisfactorily-restocked areas being treated over the past several years. Round '2' of the Kispiox Timber Supply Review Process began in 1999, and backlog lands are incorporated in the base case, likely with some negative impact on timber supply. As stewards of the forest resource, treatment and elimination of backlog lands is a high priority for the ministry. The Kispiox Forest District has prepared a detailed silviculture strategy outlining all projects required to address backlog and other critical silviculture needs in a realistic and timely manner. The content of this resource management plan is based upon the district strategy.
- Consistently reduced funding in silviculture resulting in only a small portion of the backlog free-growing program being addressed. Potential timber supply issues include: conversion of all satisfactorily restocked land to NSR; conversion of satisfactorily restocked land to mixed wood; and, reduction of growth potential of satisfactorily restocked stands due to vegetation competition.

2.6.3 Opportunities to Increase Timber Supply

The Kispiox Forest District is primarily concerned with the overwhelming amount of backlog sites within the District and the associated negative impact on timber supply. Otherwise, opportunities to increase timber supply over the short and mid terms are limited. In the short term, the preponderance of old age stands limits the potential. In the mid term, commercial thinning is not viable as it would be at the expense of reducing long term harvest level further than forecast. Hemlock stands do not show consistent response to fertilization.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
◆ Short Term	1. Bring all backlog sites (approx. 45,000 ha) to free growing status by 2010.	Short term harvest levels as per base case forecast.
	2. Maintain crop tree vigor by reducing impact of forest pests.	Better estimates of forest health agents will allow for more accurate estimates of timber supply losses from stands that do not achieve stocking and site potential.
	3. Identify backlog NSR. Reclassify as needed, treat remaining area.	Maximize site potential, maintain AAC.
	4. Identify location and areas affected by Pl rust and needle casts, mitigate losses. Rehab as required.	Mitigate volume losses.
◆ Mid Term	1. Increase management emphasis and harvests in deciduous stands.	Increase mid term harvest levels by 2%. Length of mid term transition period shortened due to higher long term harvest level (see "long term").
	2. Reduce Green-up ages	
	3. Identify location and extent of IBB and Tomentosus impacts	
	4. Determine the effects of Bl ingress in IBB infected stands.	
◆ Long Term	1. Confirm site indices.	1. Increase LTHL by 20%;
	2. Increase regenerated stand volumes by 20% by: • using improved and larger planting stock; • reducing stand voids (OAF1) from 15% to 10%; and • fertilizing suitable stands.	2. Increase LTHL by 15%; Total increase: 35%. Stabilize harvests at higher long term level 4 decades earlier than in base case.
	3. Rehabilitate 25% of unmerchantable forest types, roads and landings	
	4. Investigate Commercial Thinning opportunities.	

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
◆ Spacing		
◆ Fertilization	Fertilization not assessed in TSR.	Candidate stands

Treatment	Comment	Treatable Area
		limited by type and location.
◆ Commercial Thinning	Chief Forester notes opportunity will increase as managed stands move into more appropriate age ranges in future decades (rationale, 21). Not required to relieve adjacency constraints as this is not a limiting factor. Priority on age class 2 & 3 stands where stocking is greater than 3000 stems per hectare.	Current known and accessible opportunity is minimal (rationale, 21).
◆ Backlog	All assumed to be Free Growing in next 10 years. No additional opportunity.	4 455 ha
◆ Rehab	Once backlog program is completed, investigate rehab opportunities for PFT, deciduous leading or poor sites, in-block roads and landings.	

Working Targets

The Kispiox Forest District silviculture program works to maintain the timber supply for sustainability in support of the current model or rate of cut as determined by the Chief Forester. Summaries of TSR timber supply issues are described in section 2.6.2.

Maintenance activities (backlog reforestation)

Ensure basic legal obligations and plantation maintenance activities are addressed as the **highest priority**.

Working Target 1:

To ensure prompt and effective reforestation and stand tending on backlog site until free growing is achieved; and,

To declare all backlog sites Free Growing by the year 2010.

Strategies to meet Working Target 1:

Conduct an *accelerated* stocking/free growing assessment to maintain up to date information on land status and brushing treatment needs to ensure FG is created or maintained. Attempt to prepare a treatment prescription in accordance with Ministry Policy immediately after the survey season for every site proposed for brushing treatment.

Conduct brushing treatments on high risk stands to protect existing investments by ensuring impeded plantations remain Satisfactorily Restocked (SR) and achieve free growing status by the year 2010.

When possible and economically viable, implement stand improvement treatments (spacing concurrent with brushing treatments) that will increase the number of free growing stems on impeded or marginally free growing stands to produce higher volume stands. High priority is established where conifer crop tree stocking is greater than 5,000 sph; greater than 3,000 but less than 5,000 is medium priority.

Accelerate stand tending of backlog sites to meet Working Target 1. It is estimated that 2,000-3,000 hectares per year of stand tending will be necessary.

Continuously maintain health and vigor of reforested sites (See Working Target 5, Forest Health).

The cumulative cost of all brushing treatments should not exceed $2,000 per hectare.

Treat stands with suitable road access or where access requires minor upgrading.

Working Target 2:
To facilitate achievement of free growing, some blocks will require inclusion of deciduous.

Deciduous may become more important in the future wood supply and to dismiss its value based on present market conditions reduces future management options. Considered a Ministry Principle, treating stands to produce a diversified portfolio of forest products allows BC to minimize risk and better respond to changing market conditions.

Strategies to meet Working Target 2:
Maintain, where economically and biologically feasible, a component of deciduous in backlog areas - up to 20 percent of the inventory label for all blocks.

Deciduous component is not to conflict with achievement of conifer stocking levels.

Consider accepting deciduous on backlog areas as 'acceptable crop trees' where conifer stocking is less than desired. Accept the largest, most vigorous trees, preferring birch, cottonwood, aspen in descending priority. This applies on a site-specific basis where site and stocking conditions warrant.

Deciduous which has grown to 15 cm dbh should not be felled or girdled during any stand tending treatment. These trees are considered near-merchantable, and felling may damage conifer crop trees or sprouting may negatively influence conifer tree free growing state.

Working Target 3:
Increase productive area by rehabilitation and reforestation of sites currently classified as **NSR** to maintain the LTHL.

To eliminate Not Satisfactorily Restocked (NSR) areas by 2003.

Strategies to meet Working Target 3:

- Conduct an *accelerated* stocking assessment program to maintain up to date information on land status and site preparation and planting treatment needs. Attempt to prepare a backlog SP or a planting prescription immediately after the survey season for every site proposed for planting or fill planting.
- Identify NSR that is more appropriately managed for non-timber resources and revise management strategies to accept existing and pre-existing conditions.
- For Backlog areas disturbed between January 1, 1982, to September 30, 1987, establish baseline information upon which to rank areas for treatment, and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good, Medium, and Poor** sites by the year 2003.
- For Backlog areas disturbed before January 1, 1982, identify **Good and Medium** sites first, then Poor and Low sites, and confirm that indicated site productivity is

correct. Establish baseline information upon which to rank areas for treatment and to develop Backlog Silviculture Prescriptions. Where economically viable, complete all site preparation and planting on **Good and Medium** sites by the year 2003.

The following areas should **NOT** be scheduled for planting:

- Areas where the average age of well-spaced stems is less than 12 years and stocking exceeds existing minimums for the ecosystem association (Reference: *Establishment to Free Growing Guidebook*).
- Areas where the average age of well-spaced stems is 12 years or greater and the number of well-spaced stems is 60% of the Guidebook minimum's. This is a guideline only. Each block should be individually considered before applying this reduced "backlog rule" stocking standard.
- Areas coded as inoperable or environmentally sensitive.
- Areas that were selectively logged or harvested by the shelterwood or seed tree system. Often these areas regenerate naturally and may not require further treatments other than a free growing assessment.
- Areas less than five hectares often regenerate naturally and are often considered low priority or uneconomic to treat.
- Use 'A' class seed or better and large planting stock in order to increase regeneration stand volume and minimize future brushing treatment.
- Do not reforest if the cumulative cost of all brushing treatments is estimated to exceed $1,500 per hectare.
- Treat stands with suitable road access or where access requires minor upgrading.

2.6.4 Opportunities to Improve Timber Quality

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the Timber Supply Review. The Timber Supply Review for the Kispiox TSA indicates that during four years ending on December 31, 1995, 57% of the timber harvested was of sawlog quality and 43% was pulp. Forest district staff feel that this profile is unlikely to change significantly in the future. Therefore, incremental silviculture in the District is only implemented when the benefits to the TSR outweigh the costs of applying the treatment and of diverting investments from backlog initiatives.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
◆ Short Term	Spacing	The time required for volume recovery is directly related to spacing intensity. It is unlikely that volume recovery will occur before harvest, therefore economic viability is a key factor to consider before proceeding with this type of treatment. A minimum of 4% return on investment.
◆ Mid Term		
◆ Long Term		

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
◆ Spacing	Poor crop tree selection may further risk volume recovery.	High productivity sites or combination with other treatments--prune, fertilize. Lodgepole pine stands. Stands 5,000-10,000 stems/ha are high priority. Stands 3,000-5,000 stems/ha are med. priority.
◆ Commercial Thinning		Currently few suitable timber types on accessible terrain.
◆ Pruning	Considered once backlog obligations are reduced.	
◆ Space/ Prune		
◆ Space/ Prune/Fert		
◆ Other		

Working Targets

Incremental activities

The ministry policy is that incremental silviculture programs will be used to manage forests beyond the free growing stage to meet the sustainable economic, social and environmental objectives of the people of British Columbia. These objectives will be met by improving the forest health, stand value, wildlife habitat, wood flow and employment opportunities. Incremental silviculture occurs on those stands that have met the basic "free growing" standards where it has been shown that it is economically viable to perform the treatment, be that spacing, pruning or fertilization.

This work holds high to medium priority inasmuch as there are benefits to be realized in the TSR. **However it is important to not divert investment and effort from backlog initiatives to fulfill enhanced forestry strategies.** Treating backlog NSR sites with uniform stocking and protecting plantation investments provides greater return on investments than incremental activities. However, in certain instances, financial analysis may reflect otherwise, depending upon comparisons of specific sites.

Working Target 4:

Carry out a wide range of silviculture treatments that will provide a *diversified portfolio of forest products and conditions* in order to minimize risk and better respond to future market conditions. Ensure the development of regimes that will increase the regenerated stand volume to minimize the *mid-term provincial shortfall* and attempt to maintain the current AAC as the LTHL in the Kispiox TSA. Attempt to increase the overall log quality.

Strategies to meet Working Target 4:

- Develop a series of density management regimes to ensure a wide range of densities, forest conditions and habitats are maintained over the landscape. These regimes may include juvenile spacing, fertilization, pruning, commercial thinning and no-treatment options. Until such specific regimes are developed, the *interim strategy* is to produce stand density management prescriptions that will maximize piece size without compromising the total volume production and that will leave opportunities for fertilization and commercial thinning.

- Implement various regimes of density control that will maximizes MAI, volume and piece size in age class 1 & 2 stands. Spacing stands between 5,000 – 10,000 stems per hectare are high priority. Stands between 3,000 – 5,000 stems per hectare are medium priority. Crop tree vigor must take precedence over uniformity of spacing to mitigate the "chainsaw" effect.
- Prune stands as outlined in the "Pruning guidebook.". This strategy will be more fully developed when backlog obligations have been sufficiently reduced.
- Implement a fertilization program targeting first, previously spaced age class 3 & 4 pine stands and thrifty immature untreated pine stands with favorable live crown size and vigor. Secondly, fertilize younger stands with room for crown expansion. Thirdly, fertilize at time of fill-planting on difficult to regenerate sites to assist establishment and resistance to competition.
- To set up stands for commercial thinning using density control treatments in order to provide interim harvest without reducing the potential of the residual stand.
- Investigate options for rehabilitation of non-merchantable forest stands.
- Treat stands with suitable road access or where access requires minor upgrading.

2.6.5 Kispiox Forest District Sustainable Harvest Data

The silviculture program proposed in this plan is listed in the following tables. Although the plan consists mainly of backlog activities, these are expected to decline over the next five years. No accounting is made for future funding levels. These tables are based solely on stewardship needs.

2.6.5.1 Enhanced Forestry Table

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	10000	20400	5000	5000	5000	30.00	300000	H
Spacing	0	200	200	200	200	0.00	0	M
Pruning	0	100	100	100	100	0.00	0	M
Fertilizing	0	0	0	0	0	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	10000	20700	5300	5300	5300	30.00	300,000	
Planning and prescriptions							0	
Total dollars							300,000	
Forest Health Enhancement								
Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Habitat Supply and Biodiversity Enhancement								
Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Domestic Range								
Treatments	0	0	0	0	0	0.00	0	
Enhanced Forestry Activities - Management Unit Total								
Surveys	10000	20400	5000	5000	5000	30.00	300,000	
Spacing	0	200	200	200	200	0.00	0	
Pruning	0	100	100	100	100	0.00	0	
Fertilizing	0	0	0	0	0	0.00	0	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	10000	20700	5300	5300	5300	30.00	300,000	
Planning and prescriptions							0	
Studies funding							0	
Total dollars							300,000	

2.6.5.2 Backlog Program Table

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	200	200	200	200	200	700.00	140000	H
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	200	200	200	200	200	699.99	140,000	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							140,000	
Backlog Reforestation								
Surveys	500	0	0	0	0	20.00	10000	H
Site preparation	0	0	0	0	0	0.00	0	
Planting	200	0	0	0	0	1,400.00	280000	H
Brushing	200	200	200	200	0	484.00	96800	H
Totals hectares	900	200	200	200	0	429.78	386,800	
Seed purchase	200000	0	0	0	0	0.25	50,000	H
Prescriptions and planning dollars							7,000	H
Total backlog reforestation							443,800	
Impeded areas								
Surveys	6000	6000	6000	6000	6000	25.00	150000	H
Brushing	2000	2000	2000	2000	2000	700.00	1400000	H
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	8000	8000	8000	8000	8000	193.75	1,550,000	
Prescriptions and planning dollars							90,000	H
Total impeded areas							1,640,000	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	32	100	100	100	100	1,400.00	44800	M
Reforestation	32	100	100	100	100	484.00	15488	M
Totals hectares	64	200	200	200	200	941.99	60,288	
Seed purchase	32,000	100000	100000	100000	100000	0.25	8,000	M
Prescriptions and planning dollars							30,000	M
Total site restoration							98,288	
Backlog Program Activities - Management Unit Total								
Surveys	6500	6000	6000	6000	6000	24.62	160000	
Site preparation	32	100	100	100	100	1,399.91	44800	
Planting	232	100	100	100	100	1,273.64	295488	
Brushing	2400	2400	2400	2400	2200	682.00	1636800	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	9164	8600	8600	8600	8400	233.20	2137088	
Seed purchase	232000	100000	100000	100000	100000	0.25	58000	
Prescriptions and planning							127,000	
Recommended studies							0	
Total backlog program							2,322,088	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.6.5.3 Performance Measures Based on Activities Planned for 2002/2003

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	0	0	5,445	32	232	2,400	0	0	0	8,109	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	0	0	0	0	44,336	63,960	0	0	0		**108,296**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			400								**400**
1.5	Est. area that will be declared as free growing (ha)			2,000								**2,000**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	0	0	545	30	464	6,264	0	0	0	811	
3.3	Est. total full time equivalent positions (FTE)	0	0	3	0	3	35	0	0	0	5	**45**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**2,200**

2.6.5.4 Studies Table

No studies are proposed, at this time.

2.6.5.5 Management Unit Summary Table

Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	10,000	20,700	5,300	5,300	5,300	30	300,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	9,164	8,600	8,600	8,600	8,400	233	2,137,088
Planning, prescriptions and seedlings							185,000
Totals	19,164	29,300	13,900	13,900	13,700		2,622,088

Performance Measures

Potential total merchantable volume increment in 65 years	108,296 m^3
Estimated ha that will be reclassified as stocked	400 ha
Estimated ha that will be declared as free growing	2,000 ha
Estimated total full time equivalent positions generated	45 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	2,200 ha

2.6.5.6 Woodlot Program Table

The woodlot program for the Kispiox Forest District is based on discussions with the Kispiox Woodlot Association and the Woodlot Forester for the District. The following table is based on a three year plan developed by the Association in 2000.

Table of Backlog and Enhanced Forestry Activities

Activities for Enhanced Forestry

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	0	0	0.00	0
Spacing	0	0	0.00	0
Pruning	0	0	0.00	0
Other	0	0	0.00	0
Totals hectares	0	0	0.00	0
Planning and prescriptions				0
Total dollars				0

Activities for Backlog Program

	Treatment Goals (ha)		Plan 2002/03	
	2002/ 2003	2003/ 2004	Unit Cost ($/ha)	Funding ($)
Surveys	0	26	0.00	0
Site preparation	0	0	0.00	0
Planting	51	12	347.94	17745
Brushing	21	41	428.57	9000
Totals hectares	72	79		26,745
Seed purchase	50700	12000	0.25	12,675
Prescriptions and planning dollars				
Total backlog reforestation				39,420

Enhanced Forestry and Backlog Program Activities - Management Unit Total

Surveys	0	26	0.00	0
Site preparation	0	0	0.00	0
Planting	51	12	347.94	17745
Brushing	21	41	428.57	9000
Spacing	0	0	0.00	0
Pruning	0	0	0.00	0
Other	0	0	0.00	0
Totals hectares	72	79		26745
Seed purchase	50700	12000	0.25	12675
Prescriptions and planning				0
Recommended studies				
Total Program				39,420

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.7 Kalum Forest District

2.7.1 Basic Data

The management units included in this RMP are: Kalum TSA, Nass TSA, TFL 1 (Skeena Cellulose) and TFL 41 (West Fraser). In addition to these, it is expected that the Nisga'a Lisims Government will pursue funding opportunities with Forest Renewal BC for silviculture activities within Nisga'a Lands.

Land Area

TSA	Total Area of TSA (ha)	Net Timber Harvesting Land Base-THLB (ha)
Kalum TSA	540,000	98,256
Nass TSA	604,754	255,761
TFL 1		
TFL 41	703,745	69,686
Nisga'a Land		
Total	1,848,499	423,703

Annual Allowable Cut (AAC)

TSA	AAC (m^3)
Kalum TSA	436,884
Nass TSA	1,142,400
TFL 1	611,000
TFL 41	400,000
Total	2,590,284
Woodlot AAC	4,316

According to the Kalum Timber Supply Area Analysis Report (1999), the processing facilities in the Kalum TSA also rely on other TSAs, TFLs, woodlots and private lands for their timber supply. Skeena Cellulose operates a large sawmill in Terrace with an annual capacity of approximately 600,000 cubic metres. West Fraser Mills Ltd. also operates a large sawmill in Terrace with an annual capacity of approximately 650,000 cubic metres. Logs not suitable for these mills are shipped to pulp mills in Kitimat or Prince Rupert. Terrace Pre-Cut conducts custom drying of Skeena Cellulose lumber. There are also a number of other small manufacturing facilities in the Forest District.

The total AAC for all tenures in the district is 2, 727,000 cubic metres per year. In 1999, the combined harvesting by all licensees was 2,090,028 cubic metres per year, from an area of 4,693 ha. This harvest level is expected to continue.

Site Class Profile

Classes	<15	15-22	25-35
Kalum TSA	44%	48%	8%
Nass TSA	16%	82%	1%
TFL 1			
TFL 41	35%	60%	5%

In the Kalum TSA, approximately 75% of the sites in the timber harvesting land base are currently classified as having good or medium site productivity, which is expressed as having site index of greater than or equal to 13 metres at age 50. Conversely, the site class profile in the Nass TSA is generally considered poor.

Age Class

Years	0-20	21-100	100-250	250+
Age Classes	(1)	(2-5)	(6-8)	(9)
Kalum TSA	27%	29%	12%	32%
(TSR figure 5, page 12)				
Nass TSA	13%	2%	39%	46%
(TSR)				
TFL 1	10%	17%	13%	60%
(MP table 2, page 23)				
TFL 41	19%	7%	14%	60%
(MP table 7, page 35)				

* "Other" category included in 0-20 years.

Tree Species Profile

	Hemlock	Abies	Spruce	Pine	Cedar	Deciduous
Kalum	76%	8%	6%	5%	1%	4%
Nass	54%	38%	3%	5%	0	0%
TFL 1	78%	11%	2%	4%	1%	2%
TFL 41	81%	9%	2%	0	7%	2%

Incremental Silviculture History

Over a period of about 13 years, from 1985 (FRDA I) until 1998 a combination of 3 factors (ample availability of second growth stands + plenty of labour + adequate funding) enabled the 3 agencies in the Kalum Forest District (BCFS, Skeena Cellulose and West Fraser) to carry out very ambitious incremental silviculture programs. Since 1998, funding has become increasingly constrained and is now being directed to the licensees, thereby reducing our ability to manage many second growth stands. Only the highest priority stands are now being brushed, the remainder have to be left to develop naturally.

Because of the age structure of the forests, the shorter growing season, low site productivity and limited access in the Nass TSA, incremental silviculture opportunities are concentrated in the Kalum TSA where productivity is higher.

2.7.2 Issues

Previous RMPs have included silviculture investment strategies for the 4 management units within the Kalum Forest District. A shortcoming of these strategies was a lack of provincial context. In 1999, work began on a province wide program to prepare forest level silviculture investment plans for all Timber Supply Areas and Tree Farm Licences. The purpose of the management unit silviculture strategy is to: document issues and opportunities regarding timber and habitat supply; develop priorities and rationale for backlog and incremental silviculture regimes; ensure strategic context for all Forest Renewal BC supported investments; support the RMP process; and confirm transparent criteria for investment decisions between management units. Late in 1999 that process began for the Kalum TSA followed in2000 for TFL1 and TFL 41. At this time (June 2001), a draft report for the Kalum TSA is still in-preparation, so inclusion of (even preliminary) results is speculative. A great deal of effort will go into reviewing the report to ensure that the conclusions are completely supported by data, not supposition. This is crucial in order to ensure that the recommendations can be used with confidence. Anecdotal evidence indicates that historic incremental silviculture investments can be supported by a significant increase in annual harvest. Incremental silviculture investments can also provide for an uninterrupted harvest flow (no fall-down).

The Kalum Land and Resources Management Plan (LRMP) was approved by government in April 2001. Work has begun on implementing this higher level plan. An impact of the plan will be to provide direction for silvicultural activities.

Proposed silviculture activities include: juvenile spacing, planting, brushing, surveys.

The management units included in this RMP are: Kalum TSA, Nass TSA, TFL 1 (Skeena Cellulose) and TFL 41 (West Fraser). In addition to these, it is expected that the Nisga'a Lisims Government will pursue funding opportunities with Forest Renewal BC for silviculture activities within Nisga'a Lands.

Presently, there are 4 woodlot licences issued in the Kalum TSA. The woodlot AAC contribution is [illegible] cubic metres per year. Woodlot licensees have basic obligations until "Free Growing". Their silvicultural priorities are similar to District priorities since many of the District issues also affect woodlot licensees.

Individual Issue Analysis

Issues which affect timber supply as well as timber quality in the Kalum Forest District include:

- World prices for forest products.
- Economics of harvesting stands with 40% pulp content.
- Nisga'a Lands, SBFEP operations will cease on a Nisga'a treaty effective date. Other licensee operation are covered by a five year transition strategy.
- Conventional harvesting is more constrained in visually sensitive areas.

- Commercial thinning opportunities have yet to be fully explored.
- Site productivity of second growth (managed) stands. More reliable data will help justify treatments.
- Commercial harvest of pine mushrooms may affect the "timber harvesting land base".
- Kalum Land and Resource Management Plan: the uncertainty about how this plan will affect timber supply.
- Area reductions and that affect on AAC.
- Forest Health: root rot, comandra blister rust and mountain pine beetle.

2.7.3 Opportunities to Increase Timber Supply

In the past, the silviculture strategy for the Kalum Forest District has focused on filling an age class gap. The first round of the Timber Supply Review determined that this age class gap would negatively impact timber supply. However, the latest round of the Timber Supply Review (1999) indicated that the age class gap no longer existed. Because this finding implies a major change in the direction of silviculture for the Forest District, a Level 2 silviculture analysis was initiated to further test this result. Therefore, once the findings from the Level 2 silviculture analysis are released, the Kalum Forest District will develop an updated silviculture strategy to increase timber supply.

Potential Strategies by TSA

TSA	Objective/Action	Anticipated Result
♦ Kalum and Nass	Maintain productive area by reforesting sites classified as NSR. Reforest all good and medium sites by 2002.	Maintain the current harvest level.
	Maintain investments in plantations by aggressively brushing areas as required until the areas reach free growing.	
	Capture growth enhancement potential by managing density and competition.	
	Consider rehabilitation treatments only after careful cost/benefit analysis.	
	Nisga'a Treaty: ensure obligations on core lands are met.	
	Complete the Level 2 Silviculture Strategy and analyze of the impact varying amounts of spacing have on the timber supply, to verify objective A.	
♦ TFL 1	Maintain the productive land base by reforesting areas currently classified NSR, and those lands that are found to be NSR during surveys.	Maintain the current harvest level.
	Investment will focus on cost-effective fill planting, primarily. Rehabilitation projects will not be undertaken unless they are low-risk and determined to yield a return similar to that of other potential enhanced forestry projects.	
	Maintain investments in plantations by aggressively brushing areas as required until the areas are free-growing.	
	To increase stand operability through spacing (opportunity for commercial thinning and decreased final harvest age),	

TSA	Objective/Action	Anticipated Result
	helping mitigate any reductions in local allowable harvest levels.	
	To increase stand value through spacing making harvesting more profitable in the Region.	
	On select sites, to produce high-value clear wood through pruning.	
	To maintain 6000 person days of employment annually (>30% First Nation's), focusing on longer-term jobs, where possible.	
	Complete an analysis o the impact of varying amounts of spacing on the timber supply.	
♦ TFL 41	Maintain productive area by rehabilitation and reforestation of sites currently classified as NSR.	Maintain the current harvest level.
	Maintain investments in plantations by aggressively brushing areas as required until the areas are free-growing.	
	Provide an economic sustainable saw log supply to the processing plants.	
	Increase piece size through modification of density via spacing.	
	Complete an analysis o the impact of varying amounts of spacing on the timber supply.	

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
♦ Spacing		All good and medium sites with densities >2500sph on slopes <60% (TFL 41), or 2000-5000 sph (BCFS), or >3500 sph (TFL 1). Single entry spacing prescribed for stands SI <20, no CT planned (TFL 41).
♦ Fertilization		
♦ Commercial Thinning (CT)		Limited to one entry/rotation (TFL 41, BCFS). <25 years at 1200 sph (TFL 1). >25 years at 1000 sph (TFL 1).
♦ Rehabilitation		
♦ Backlog NSR	Plant. Brush to ensure free-growing by prescribed time and protect investment. (TFLs 1, 41, BCFS)	All good and medium sites by 2000 (TFLs 1, 41), 2002 (BCFS) Fill-planting required to 2004 (TFL 1)

Working Targets

Presently, the Kalum Forest District is anticipating the results from a Level 2 silviculture strategy which will likely mean a change in direction for the District in terms of silviculture strategies and working targets. Therefore, until more specific direction becomes available, the primary working target for the District is to maintain its responsibilities as a stewardship agency.

2.7.4 Opportunities to Improve Timber Quality

The effects of incremental silviculture on the future quality of the timber resource were not analyzed in the timber supply reviews. However, the Level 2 silviculture strategy will evaluate the economic return on investments directed to pruning, spacing and fertilizing. Presently, 60% of the AAC in the Kalum TSA is sawlog quality while only 20% is of this quality in the Nass TSA.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
◆ Short Term	Spacing	
	Pruning on select sites	
◆ Mid Term		
◆ Long Term	see above	Increase stand value making harvesting more profitable in the Region Produce high-value clear wood

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
◆ Spacing		
◆ Commercial Thinning		
◆ Pruning		SI(50)=28 (TFL 1)
◆ Space/ Prune		Prune only spaced stands with SI 26+ (TFL 41, BCFS). Pruned stands will not be thinned.
◆ Fertilization		

Working Targets

Presently, the Kalum Forest District is anticipating the results from a Level 2 silviculture strategy which will likely mean a change in direction for the District in terms of silviculture strategies and working targets. Therefore, until more specific direction becomes available, the primary working target for the District is to maintain its responsibilities as a stewardship agency.

2.7.5 Kalum Forest District Sustainable Harvest Data

Four sets of activity tables are included, one for each: Kalum TSA, TFL 1, TFL 41 and one set which is cumulative totals for all 3 (Kalum District Summaries).

2.7.5.1 Enhanced Forestry Tables

Kalum TSA

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority

Surveys	2000	2000	2000	2000	2000	35.00	70000	H
Spacing	1295	1295	1295	1295	1295	926.64	1200000	H
Pruning	0	0	0	0	0	0.00	0	L
Fertilizing	0	0	166	166	166	0.00	0	L
Other	0	0	0	0	0	0.00	0	
Totals hectares	3295	3295	3461	3461	3461	385.43	1,270,000	
Planning and prescriptions							0	
Total dollars							1,270,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	1000	10000	1000	1000	1000	150.00	150000	
Totals hectares	1000	10000	1000	1000	1000	150.00	150,000	

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Domestic Range

Treatments	0	0	0	0	0	0.00	0	

Enhanced Forestry Activities - Management Unit Total

Surveys	2000	2000	2000	2000	2000	35.00	70,000	
Spacing	1295	1295	1295	1295	1295	926.64	1,200,000	
Pruning	0	0	0	0	0	0.00	0	
Fertilizing	0	0	166	166	166	0.00	0	
Other stand tending activities	1000	10000	1000	1000	1000	150.00	150000	
Totals hectares	4295	3295	3461	3461	3461	330.62	1,420,000	
Planning and prescriptions							0	
Studies funding							0	
Total dollars							1,420,000	

TFL 1

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Spacing	1300	1300	1300	1400	1400	1230.77	1600000	H
Pruning	400	500	500	500	500	1200.00	480000	H
Fertilizing	0	0	0	0	0	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	1700	1800	1800	1900	1900	1223.53	2,080,000	
Planning and prescriptions							0	
Total dollars							2,080,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Domestic Range

Treatments	0	0	0	0	0	0.00	0	

Enhanced Forestry Activities - Management Unit Total

Surveys	0	0	0	0	0	0.00	0	
Spacing	1300	1300	1300	1400	1400	1,230.77	1,600,000	
Pruning	400	500	500	500	500	1,200.00	480,000	
Fertilizing	0	0	0	0	0	0.00	0	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	1700	1800	1800	1900	1900	1,223.52	2,080,000	
Planning and prescriptions							0	
Studies funding							0	
Total dollars							2,080,000	

TFL 41

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	400	400	450	500	500	100.00	40000	H
Spacing	400	450	500	500	500	1200.00	480000	H
Pruning	0	0	0	0	0	0.00	0	
Fertilizing	0	0	0	0	0	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	800	850	950	1000	1000	650.00	520,000	
Planning and prescriptions							0	
Total dollars							520,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Domestic Range

Treatments	0	0	0	0	0	0.00	0	

Enhanced Forestry Activities - Management Unit Total

Surveys	400	400	450	500	500	100.00	40,000	
Spacing	400	450	500	500	500	1,200.00	480,000	
Pruning	0	0	0	0	0	0.00	0	
Fertilizing	0	0	0	0	0	0.00	0	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	800	850	950	1000	1000	649.99	520,000	
Planning and prescriptions							0	
Studies funding							0	
Total dollars							520,000	

Forest District Summary

Activities Stand Tending	Treatment Area Goals (ha) 2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Plan 2002/03 Unit Cost ($/ha)	Funding ($)	Priority
Surveys	2400	2400	2450	2500	2500	45.83	110000	
Spacing	2995	3045	3095	3195	3195	1095.16	3280000	
Pruning	400	500	500	500	500	1200.00	480000	
Fertilizing	0	0	166	166	166	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	5795	5945	6211	6361	6361	667.82	3,870,000	
Planning and prescriptions							0	
Total dollars							3,870,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Domestic Range

Treatments	0	0	0	0	0	0.00	0	

Enhanced Forestry Activities - Management Unit Total

Surveys	2400	2400	2450	2500	2500	45.83	110,000	
Spacing	2995	3045	3095	3195	3195	1,095.16	3,280,000	
Pruning	400	500	500	500	500	1,199.99	480,000	
Fertilizing	0	0	166	166	166	0.00	0	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	5795	5945	6211	6361	6361	667.82	3,870,000	
Planning and prescriptions							0	
Studies funding							0	
Total dollars							3,870,000	

2.7.5.2 Backlog Program Table

Kalum TSA

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							0	
Backlog Reforestation								
Surveys	2000	1000	350	350	350	25.00	50000	H
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	350	250	200	100	100	714.29	250000	H
Totals hectares	2350	1250	550	450	450	127.66	300,000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total backlog reforestation							300,000	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total impeded areas							0	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	2000	1000	350	350	350	25.00	50000	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	350	250	200	100	100	714.28	250000	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	2350	1250	550	450	450	127.66	300000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							0	
Recommended studies							0	
Total backlog program							300,000	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

TFL 1

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							0	
Backlog Reforestation								
Surveys	2900	2500	2500	2400	2200	43.10	125000	H
Site preparation	0	0	0	0	0	0.00	0	
Planting	60	20	150	0	0	833.33	50000	H
Brushing	380	280	220	120	75	855.26	325000	H
Totals hectares	3340	2800	2870	2520	2275	149.70	500,000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total backlog reforestation							500,000	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total impeded areas							0	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	2900	2500	2500	2400	2200	43.10	125000	
Site preparation	0	0	0	0	0	0.00	0	
Planting	60	20	150	0	0	833.29	50000	
Brushing	380	280	220	120	75	855.26	325000	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	3340	2800	2870	2520	2275	149.70	500000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							0	
Recommended studies							0	
Total backlog program							500,000	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

TFL 41

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	500	500	500	500	400	46.00	23000	H
Site preparation	0	0	0	0	0	0.00	0	
Planting	25	0	0	0	0	1,080.00	27000	H
Brushing	170	170	170	170	170	752.94	128000	H
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	695	670	670	670	570	256.11	178,000	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							178,000	
Backlog Reforestation								
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	150	150	150	0	0	640.00	96000	H
Totals hectares	150	150	150	0	0	639.99	96,000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total backlog reforestation							96,000	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	50	20	0	0	0	700.00	35000	H
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	50	20	0	0	0	699.97	35,000	
Prescriptions and planning dollars							0	
Total impeded areas							35,000	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	500	500	500	500	400	46.00	23000	
Site preparation	0	0	0	0	0	0.00	0	
Planting	25	0	0	0	0	1,079.87	27000	
Brushing	370	340	320	170	170	700.00	259000	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	895	840	820	670	570	345.25	309000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							0	
Recommended studies							0	
Total backlog program							309,000	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

Forest District Summary

Activities	Treatment Area Goals (ha)					Plan 2002/03		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	500	500	500	500	400	46.00	23000	
Site preparation	0	0	0	0	0	0.00	0	
Planting	25	0	0	0	0	1,079.91	27000	
Brushing	170	170	170	170	170	752.93	128000	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	695	670	670	670	570	256.11	178,000	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							178,000	
Backlog Reforestation								
Surveys	4900	3500	2850	2750	2550	35.71	175000	
Site preparation	0	0	0	0	0	0.00	0	
Planting	60	20	150	0	0	833.31	50000	
Brushing	880	680	570	220	175	762.50	671000	
Totals hectares	5840	4200	3570	2970	2725	153.42	896,000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total backlog reforestation							896,000	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	50	20	0	0	0	699.97	35000	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	50	20	0	0	0	699.89	35,000	
Prescriptions and planning dollars							0	
Total impeded areas							35,000	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	5400	4000	3350	3250	2950	36.67	198000	
Site preparation	0	0	0	0	0	0.00	0	
Planting	85	20	150	0	0	905.78	77000	
Brushing	1100	870	740	390	345	758.18	834000	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	6585	4890	4240	3640	3295	168.41	1109000	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							0	
Recommended studies							0	
Total backlog program							1,109,000	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.7.5.3 Performance Measures Based on Activities Planned for 2002/2003

Kalum TSA

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	0	0	1,320	0	0	350	1,295	0	0	3,965	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	0	0	0	0	1	9,328	21,044	0	0		**30,372**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			500								**500**
1.5	Est. area that will be declared as free growing (ha)			0								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	0	0	132	0	0	914	5,128	0	0	397	
3.3	Est. total full time equivalent positions (FTE)	0	0	1	0	0	5	28	0	0	2	37
4.1	**Forest Health Enhancement (ha)**											**1,000**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

TFL 1

	Performance Measure Input	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	60	0	957	0	60	380	1,300	400	0	3,157	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	1,599	0	0	0	11,467	10,127	21,125	0	0		**44,318**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			0								**0**
1.5	Est. area that will be declared as free growing (ha)			0								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	6	0	96	0	120	992	5,148	1,816	0	316	
3.3	Est. total full time equivalent positions (FTE)	0	0	1	0	1	6	29	10	0	2	47
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

TFL 41

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	25	0	297	0	25	370	400	0	0	1,117	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	666	0	0	0	4,778	9,861	6,500	0	0		**21,805**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			0								**0**
1.5	Est. area that will be declared as free growing (ha)			0								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	3	0	30	0	50	966	1,584	0	0	112	
3.3	Est. total full time equivalent positions (FTE)	0	0	0	0	0	5	9	0	0	1	**15**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

Forest District Summary

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	85	0	2,574	0	85	1,100	2,995	400	0	7,239	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	2,266	0	0	0	16,245	29,315	48,669	0	0		**96,495**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			500								**500**
1.5	Est. area that will be declared as free growing (ha)			0								**0**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	9	0	257	0	170	2,871	11,860	1,816	0	724	
3.3	Est. total full time equivalent positions (FTE)	0	0	1	0	1	16	66	10	0	4	**98**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

2.7.5.4 Studies Table

No Studies are proposed at this time.

2.7.5.5 Kalum Forest District Summary Table

Kalum TSA--Woodlot information is not included in this section.

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	4,295	3,295	3,461	3,461	3,461	331	1,420,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	2,350	1,250	550	450	450	128	300,000
Planning, prescriptions and seedlings							0
Totals	6,645	4,545	4,011	3,911	3,911		1,720,000

Performance Measures

Potential total merchantable volume increment in 65 years	30,372 m^3
Estimated ha that will be reclassified as stocked	500 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	37 FTEs
Forest health enhancement area	1,000 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

TFL 1

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	1,700	1,800	1,800	1,900	1,900	1,224	2,080,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	3,340	2,800	2,870	2,520	2,275	150	500,000
Planning, prescriptions and seedlings							0
Totals	5,040	4,600	4,670	4,420	4,175		2,580,000

Performance Measures

Potential total merchantable volume increment in 65 years	44,318 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	47 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

TFL 41

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	800	850	950	1,000	1,000	650	520,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	895	840	820	670	570	345	309,000
Planning, prescriptions and seedlings							0
Totals	1,695	1,690	1,770	1,670	1,570		829,000

Performance Measures	
Potential total merchantable volume increment in 65 years	21,805 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	15 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

Forest District Summary

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	5,795	5,945	6,211	6,361	6,361	668	3,870,000
Planning, prescriptions and seedlings							0
Backlog Program Field Activities	6,585	4,890	4,240	3,640	3,295	168	1,109,000
Planning, prescriptions and seedlings							0
Totals	12,380	10,835	10,451	10,001	9,656		4,979,000

Performance Measures

Potential total merchantable volume increment in 65 years	96,495 m^3
Estimated ha that will be reclassified as stocked	500 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	98 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.7.5.6 Woodlot Program Table

There are four active woodlot licenses in the Kalum Forest District. Since there is no backlog land on these woodlots and no areas that have been declared 'Free to Grow', the woodlot program does not require funding for silviculture work.

2.8 North Coast Forest District

2.8.1 Basic Data

The North Coast Timber Supply Area (TSA) and a portion of Tree Farm License (TFL) 25 (Block 5) are within the North Coast Forest District (DNC). Basic data for the North Coast TSA and TFL 25 (Block 5) follows.

Land Area

Description	Area (ha)	Area (%)
Total Area of TSA	1,955,900	100
Total Productive Crown Forest	758,800	39
Net Timber Harvest Land Base (THLB)	119,130	6

Source: 1999 TS analysis report-rounded to nearest 100 ha.

The above areas have been reduced due to some land base removals from the TSA. Updated figures are not currently available.

Description	Area (ha)	Area (%)
Total Area of TFL	311,950	100
Net Timber Harvest Land Base (THLB)	48,610	15.5

Source: Management Plan 10

TSA Annual Allowable Cut (AAC)

AAC Type	TSR1 (m^3)	TSR2* (m^3)	Change (%)
Conventional	600,000	573,624	0.0
Deciduous			
Insect/Disease			
Marginal			
Total	600,000	573,624	0.0
Woodlot AAC		796	

*Effective November 1999 prior to determination.

According to the North Coast Timber Supply Area Analysis Report (1999), International Forest Products Ltd. (Interfor) has the largest licence with 37.8% of the total available AAC. West Fraser Mills Ltd. (West Fraser) has the second largest licence at 26.9% of the AAC. Thomson Industries Ltd. has the next largest licence at 5.1% followed by Boyle & Dean Logging Ltd. which has 3.4% of the total AAC. SBFEP has been allocated 24.8% and the Forest Service Reserve (1.0%) and other licences (1.0%) comprise the remaining cut. Another source of timber and employment is Western Forest Products' TFL 25 (Block 5) with an AAC of 255,000 m^3/year.

Under current management assumptions, the 1999 Timber Supply Review (TSR 2) indicates that the current harvest level of 600,000 cubic metres per year can be maintained for another two decades, followed by a 10% decline per decade for seven decades to a long-term harvest level of 361,000 cubic metres per year.

Site Class Profile (site index ht (m) above dbh at 50 years)

Classes*	<15	15-22	22<
North Coast TSA	29%	65%	6%
TFL25 (Block 5)	20%	68%	11%

*TSA based on North Coast Timber Supply Review (1999), TFL based on Management Plan 10.

Age Class

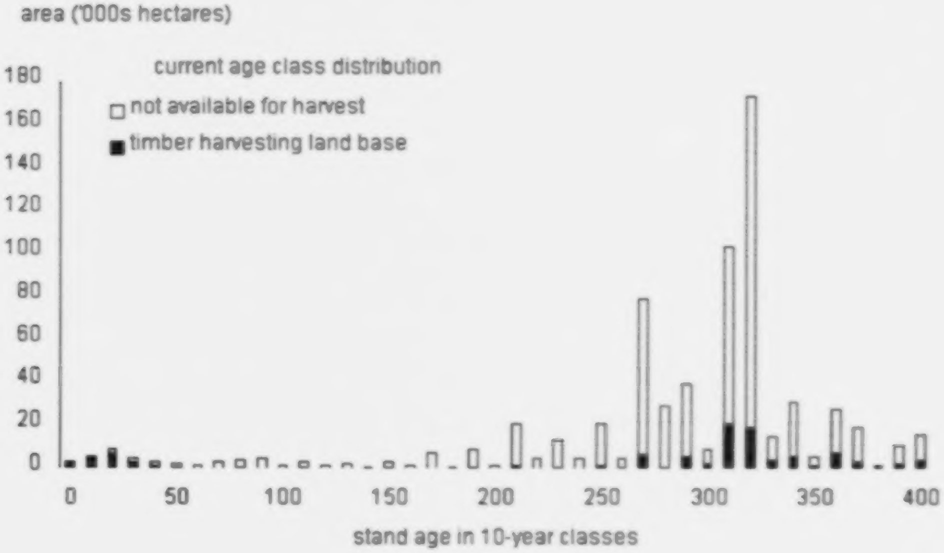

Figure--Current age class distribution — North Coast TSA productive forest land base, 1999.

In Block 5 of TFL 25, 9% of the operable working forest is 0 to 80 years old and the remaining forest is over 140 years old.

Tree Species Profile

In the TSA, Western hemlock or amabilis fir-leading stands and western red cedar stands dominate the timber harvesting land base at 53% and 40%, respectively. The remainder of the timber harvesting land base is covered by spruce-leading and cottonwood-leading stands at 7% and <0.5%, respectively.

In Block 5 of TFL 25, red and yellow cedar stands dominate the timber harvesting land base at 42% followed by western hemlock at 36%, balsam at 18%, and spruce and deciduous stands at 2% each.

Incremental Silviculture History

Incremental silviculture history for the DNC includes spacing, pruning, and fertilizing.

- To date, fertilization has only been used for site rehabilitation projects. No operational fertilization has occurred to provide for incremental growth.
- DNC first started pruning in 1991 with a 16 ha project. Since then, some pruning has occurred in 5 of the last 7 years. To date we have 226.5 ha of pruning recorded on ISIS (or about 28 ha/year). In fiscal 2000/2001, WFP has proposed completing 118 ha.
- DNC's first recorded spacing project was completed in 1980, however the program did not fully get off the ground until 1985. To the end of fiscal year 1998/1999 DNC completed 2,708 ha of spacing or approximately 193 ha/year. In fiscal 2000/2001, Interfor and West Fraser have proposed completing 140 ha. TSR 2 has based its growth assumptions on 200 ha of incremental spacing per year.

2.8.2 Issues

A variety of plans are applicable to the District and to the TSA. These plans have been reviewed for commitments, recommendations and opportunities that will address issues and investment needs that are applicable to this RMP for the land based programs.

Presently, woodlot AAC contribution is 796 m^3. The North Coast Forest District recently approved its first Woodlot Licence agreement. Due to the infancy of the Woodlot Program, (all area is presently wooded) no silviculture strategy exists. Tenure holders of woodlots have basic obligations until "Free Growing".

Summary and Conclusions of the Timber Supply Analysis

The results of this timber supply analysis suggest that the current allowable harvest level in the North Coast TSA of 600,000 cubic metres per year can be maintained for up to 20 years without either requiring substantial and rapid future harvest level reductions, or creating severe future timber disruptions. Using current inventory and timber growth information and assuming continuation of current forest management practices, harvests could be maintained at the current level for 20 years, if followed by a series of 10% reductions over the subsequent 40-year period, to a long-term harvest level of 361,000 cubic metres per year. This timber supply forecast is somewhat lower than the forecast in the previous (1994) analysis, in which the current allowable annual cut could be maintained for 60 years. The primary reason for the change is a re-inventory that covered most of the TSA, which resulted in a decrease of almost 17% in the estimate of the standing timber volume on the timber harvesting land base.

Other factors leading to the decrease in the projected timber supply are the use of a managed stand growth and yield model (which was not available for the previous analysis) for projecting growth of managed, regenerated stands, and different criteria for defining when stands are likely to become merchantable. Together, these factors led to a higher long-term level, but also to longer minimum harvestable ages, which extended the length of time over which existing older stands must support harvests, relative to the 1994 analysis.

The base case results described above reflect current knowledge and information on forest inventory, growth and management. However, uncertainty exists about several factors important in defining timber supply. A series of sensitivity analyses showed that these uncertainties affect timber supply in varying degrees. The results for all for all sensitivity analyses are summarized in the TSR by comparing cumulative timber supply over three different time frames to base case results. The base case is particularly sensitive to changes which influence the amount of old-growth volume available, because the harvest forecast relies on harvests from old-growth stands for almost 140 years. The uncertainties with the largest potential negative effects on base case projected harvest levels over the short term (next 20 years) are estimates of timber volumes in existing stands and the size of the timber harvesting land base. A TSA-wide inventory audit was released just prior to the completion of this report. The audit results indicate a small, but not statistically significant overestimate of timber volumes in mature stands (over 60 years old) on the physically and economically operable land base. Overall, the audit therefore suggests that the inventory reasonably accurately portrays the standing timber volume in existing stands at the TSA level. No significant uncertainties regarding the size of the timber harvesting land base are apparent. A new operability classification was recently completed for the TSA.

Reductions to minimum harvestable ages, and old-growth site index adjustments have the greatest potential to increase medium-term timber supply, or offset short- or medium-term timber supply reductions due to other factors.

Within the ranges of uncertainty tested, several factors were shown to have negligible effects on the base case forecast. These factors include changes to green-up periods, application of alternate landscape-level biodiversity requirements, and changes in forest cover requirements used to approximate integrated resource management (IRM) adjacency constraints.

Over the long term, that is beyond 60 years, uncertainties with the greatest potential negative impact on timber supply are reductions to the timber harvesting land base or regenerated stand yields. Results suggest that application of site index adjustments after current old-growth stands are harvested and regenerated has the potential to significantly increase long-term timber supply.

In conclusion, this analysis indicates that based on current inventory and growth and yield information, and the current management regime, timber harvests in the North Coast TSA can be maintained at the current allowable level for the next 20 years. The analysis indicates that several factors related to the current forest inventory and management regime could affect timber supply. However, except for the likelihood that site index estimates for old-growth stands under-estimate actual productivity, which affects timber supply primarily over the medium- and long-terms, there is no conclusive evidence to suggest that significant inaccuracies exist in the information used. Nevertheless, uncertainties in initial stand density estimates, and product requirements of future markets and mills - both of which affect the time at which stands will be merchantable - and in estimates of timber volumes in existing stands, result in uncertainty in the timber supply forecasts for the medium term.

Issues Addressed by the Silviculture Strategy (Type I)

While many issues were proposed and discussed in the workshop (http://www.for.gov.bc.ca/hfp/silstrat/index.htm), the participants developed a silviculture strategy that addressed three key issues:

- protecting seedlings and young trees from damage by porcupine and deer;
- delaying the falldown projected for decade 3, and
- investigating items causing uncertainty about site productivity and the size of the timber harvesting land base (THLB).

TFL Issues

Timber Quantity

The TFL 25 Management Plan 10 Timber Supply Analysis is in process and due for submission in the fall. The TSA will fully incorporate the Forest Practices Code as well as new protected or protection areas, and will use spatial modeling to project sustainable development. The previous Management Plan projected the following:

The ACC will decline to 212,000 m^3/year from 255,000 m^3/year in decade two. The sustainable harvest level in this unit has been negatively impacted by the creation of the Spirit Bear Protection Area. A significant proportion of the remaining volume in this unit is helicopter based.

Timber Quality

The last Timber Supply Analysis projected that the bulk of the harvest in the short-term, mid-term will continue to come from mature forests. In the mid to long term, harvest volumes will depend on second growth. If projected rotations do not allow time for the development of quality characteristics such as small knots, clear wood and mature fibre, there could be a reduction in stand value not only on a cubic meter basis but also on a per hectare basis.

WFP's growth and yield work indicates that rotations can be extended without a significant impact on LRSY as long as there is a reasonable age class distribution. Longer rotations are proposed in order to produce stands with an average diameter in the 40 to 45 cm dbh range.

A timber quality analysis produced for the last TFL 25 Management Plan compared second growth grades predicted by the model to produced grades from current second growth logging. The analysis indicated it was possible to produce a second growth grade profile similar to our experienced production from second growth stands if an average diameter between 35 and 45 cm was targeted.

The TFL 25 analysis confirmed that by extending rotations it would be possible to produce these diameters and improve log grades. Overall, the minor loss in quantity from a longer rotation is more than offset by an increase in future value.

The analysis concluded that when compared to longer rotations, there was little economic justification for silviculture treatments that increased second growth diameters.

However, it did note that pruning would be necessary if there was a desire to produce the highest grades.

2.8.3 Opportunities to Increase Timber Supply

Unless indicated, all information in this section refers to the TSA. The more general strategies may apply to both TFL 25-Block 5 and the TSA.

Potential Strategies by Response Time Frame

Response Time Frame	Objective/Action	Anticipated Result
◆ Short Term	None.	Maintain the current harvest level.
◆ Mid Term	None.	Smooth transition to a lower LTHL.
◆ Long Term	Increase and accelerate growth of regenerated stands. Protect young stands.	Reduce the time to achieve minimum harvest age, and increase the volumes available for harvest in those stands. Maintain LTHL.

* can potentially be accomplished with FRBC funding

Potential Treatments and Analysis Results

Treatment	Comment	Treatable Area
◆ Spacing	Space to 700-1400 sph, high site index 2nd growth stands, 15-25 yr old with easy access, in areas not prone to porcupine damage.	200 ha/yr
◆ Fertilization	Time-of-planting fertilization, which has the potential to shorten time to free growing by 1-3 years; Block 5 (TFL25) has not traditionally been considered a good area to fertilize due to poor access. Fertilization screen trials established in this area.	800 ha/yr
◆ Commercial Thinning	Pre-commercial thinning and repeated fertilizer treatments (every 15 years). Increase post-thin densities and thin stands later to mitigate porcupine damage.	Approximately 500 ha/yr could be treated in this manner. Fertilization trials to help provide this information have been included in the "To-Do" list.
◆ Rehabilitation		Few treatable areas.
◆ Current Reforestation		
◆ Backlog NSR	Alter species composition with species that are less attractive to the porcupine.	500 ha/yr
	Concentrate cedar planting where most needed to reduce protection costs.	200 ha/yr
	All backlog assumed treated within next 10 years. No additional opportunity.	

* can potentially be accomplished with FRBC funding

Other Potential Strategies

Protect young stands from porcupine damage. Porcupine affect young stands by feeding on the bark, often girdling trees. Some proposed strategies to deal with porcupine damage include:

- Create dispersed patterns of small cutblocks (porcupine populations are believed to be positively affected by opening size; larger disturbed areas are believed to stimulate population growth).
- Reduce den habitat (see also "To-Do" list) with various practices, including burning or re-distributing slash piles, and avoiding creation of slash piles.
- Direct population control.

Protect young stands from deer browsing. Maintaining the desired composition of cedar on the landbase after harvesting is dramatically affected by deer browsing on young seedlings. The following strategies have been proposed to help maintain a cedar component on the landscape in the presence of deer:

- Use seedling protection such as mesh tubes and cones; utilize existing obstacles (slash/stumps) to inhibit access to individual trees.
- Create dispersed patterns of small cutblocks (deer populations are believed to be positively affected by opening size; within limits, larger disturbed areas are believed to stimulate population growth).
- Direct population control by increasing bag limit for hunters.

With an inoperable area four times the size of the net THLB, issues and opportunities associated with operability overshadow those of silviculture. However, assuming an operability status quo, silviculture should not be ruled out as a means to improve future harvest levels.

2.8.4 Opportunities to Improve Timber Quality

While not identified in the silviculture strategy spacing, pruning and fertilization have the potential to improve timber quality by positively affecting piece size and amount of clear wood.

Potential Strategies by Response Time Frame

Response Time Frame	Strategy/Action	Anticipated Result
◆ Short Term	None – Growing stock is currently in Old Growth	
◆ Mid Term	None – Growing stock is currently in Old Growth	
◆ Long Term	Control Species, increase piece size, improve wood quality	More desirable, market niche

Potential Treatments and Analysis Results

Treatment	Comment/ Potential Treatment Regimes	Treatable Area
◆ Spacing	* potential for controlling species and increasing piece size	Currently limited, however 1980s harvest is coming on line.
◆ Commercial Thinning	Very limited suitable areas High access costs	
◆ Pruning	* Potential for increasing wood quality as above.	~ 2000 + ha
◆ Space/ Prune		
◆ Fertilization	The majority of stands contain a significant portion of hemlock which responds questionably to fertilization however, piece size could be positively affected by fertilization.	Unknown

* can potentially be accomplished with FRBC funding

Working Targets

Working targets for qualities are specific to tenure and supply area profiles, but generally are managing for high quality sawlogs and desirable species profile. As described above, the silviculture program can work towards controlling species, increasing piece size and improving wood quality.

The DNC silviculture program, including the TFL, lands works to maintain both supply and quality targets for sustainability in support of the current model or rate of cut as determined by the Chief Forester.

2.8.5 North Coast Forest District Sustainable Harvest Data

Three sets of activity tables are included, one for the North Coast TSA, TFL 25 (block 5) and one set which is cumulative totals for both (North Coast District Summaries).

2.8.5.1 Enhanced Forestry Table

North Coast TSA

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0	0	
Spacing	70	120	120	120	120	2400.00	168000	3
Pruning	20	15	15	15	15	2200.00	44000	4
Fertilizing	0	0	0	0	0	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	90	135	135	135	135	2355.50	212,000	
Planning and prescriptions							25,000	3
Total dollars							237,000	
Forest Health Enhancement								
Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Habitat Supply and Biodiversity Enhancement								
Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Domestic Range								
Treatments	0	0	0	0	0	0.00	0	
Enhanced Forestry Activities - Management Unit Total								
Surveys	0	0	0	0	0	0	0	
Spacing	70	120	120	120	120	2,399.97	168,000	
Pruning	20	15	15	15	15	2,199.89	44,000	
Fertilizing	0	0	0	0	0	0.00	0	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	90	135	135	135	135	2,355.35	212,000	
Planning and prescriptions							25,000	
Studies funding							40000	4
Total dollars							277,000	

TFL 25 (Block 5)

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	500	500	500	0.00	0	
Spacing	0	0	0	100	100	0.00	0	
Pruning	30	30	30	0	0	4000.00	108000	2
Fertilizing	0	350	350	0	0	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	30	380	880	600	600	3999.60	108,000	
Planning and prescriptions							12,000	1
Total dollars							120,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Domestic Range

Treatments	0	0	0	0	0	0.00	0	

Enhanced Forestry Activities - Management Unit Total

Surveys	0	0	500	500	500	0.00	0	
Spacing	0	0	0	100	100	0.00	0	
Pruning	30	30	30	0	0	3,999.87	108,000	
Fertilizing	0	350	350	0	0	0.00	0	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	30	380	880	600	600	3,998.80	108,000	
Planning and prescriptions							12,000	
Studies funding							44,000	1
Total dollars							164,000	

North Coast District Summary

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Stand Tending	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	500	500	500	0.00	0	
Spacing	70	120	120	220	220	2399.97	168000	
Pruning	50	45	45	15	15	3280.00	152000	
Fertilizing	0	350	350	0	0	0.00	0	
Other	0	0	0	0	0	0.00	0	
Totals hectares	120	515	1015	735	735	2766.55	320,000	
Planning and prescriptions							37,000	
Total dollars							357,000	

Forest Health Enhancement

Spacing	0	0	0	0	0	0.00	0	
Pruning	0	0	0	0	0	0.00	0	
Other treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Habitat Supply and Biodiversity Enhancement

Riparian treatments	0	0	0	0	0	0.00	0	
Non-riparian treatments	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	

Domestic Range

Treatments	0	0	0	0	0	0.00	0	

Enhanced Forestry Activities - Management Unit Total

Surveys	0	0	500	500	500	0	0	
Spacing	70	120	120	220	220	2,399.90	168,000	
Pruning	50	45	45	15	15	3,279.87	152,000	
Fertilizing	0	350	350	0	0	0.00	0	
Other stand tending activities	0	0	0	0	0	0.00	0	
Totals hectares	120	515	1015	735	735	2,766.30	320,000	
Planning and prescriptions							37,000	
Studies funding							84000	
Total dollars							441,000	

2.8.5.2 Backlog Program Table

North Coast TSA

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							0	
Backlog Reforestation								
Surveys	2192	2100	600	600	600	120.00	263040	2
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Totals hectares	2192	2100	600	600	600	120.00	263,040	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total backlog reforestation							263,040	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	70	70	70	0	0	1,189.29	83250	1
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	70	70	70	0	0	1,189.25	83,250	
Prescriptions and planning dollars							20,000	2
Total impeded areas							103,250	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	2192	2100	600	600	600	120.00	263040	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	70	70	70	0	0	1,189.25	83250	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	2262	2170	670	600	600	153.09	346290	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							20,000	
Recommended studies							0	
Total backlog program							366,290	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

TFL 25 (Block 5)

No backlog activities are proposed at this time.

North Coast District Summary

Activities	**Treatment Area Goals (ha)**					**Plan 2002/03**		
Legal Obligations	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)	Priority
Surveys	0	0	0	0	0	0.00	0	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Max. density spacing	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Total legal obligations							0	
Backlog Reforestation								
Surveys	2192	2100	600	600	600	120.00	263040	2
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	0	0	0	0	0	0.00	0	
Totals hectares	2192	2100	600	600	600	120.00	263,040	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total backlog reforestation							263,040	
Impeded areas								
Surveys	0	0	0	0	0	0.00	0	
Brushing	70	70	70	0	0	1,189.29	83250	1
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	70	70	70	0	0	1,189.25	83,250	
Prescriptions and planning dollars							20,000	2
Total impeded areas							103,250	
Site Restoration								
Fill planting	0	0	0	0	0	0.00	0	
Rehabilitation	0	0	0	0	0	0.00	0	
Reforestation	0	0	0	0	0	0.00	0	
Totals hectares	0	0	0	0	0	0.00	0	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning dollars							0	
Total site restoration							0	
Backlog Program Activities - Management Unit Total								
Surveys	2192	2100	600	600	600	120.00	263040	
Site preparation	0	0	0	0	0	0.00	0	
Planting	0	0	0	0	0	0.00	0	
Brushing	70	70	70	0	0	1,189.25	83250	
Density spacing	0	0	0	0	0	0.00	0	
Totals hectares	2262	2170	670	600	600	153.09	346290	
Seed purchase	0	0	0	0	0	0.00	0	
Prescriptions and planning							20,000	
Recommended studies							0	
Total backlog program							366,290	

* Seed purchase includes seedlings purchase. Units are number of seedlings, or specify.

2.8.5.3 Performance Measures Based on Activities Planned for 2002/2003

North Coast TSA

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	0	0	723	0	0	70	70	20	0	883	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	0	0	0	0	1	1,866	1,138	0	0		**3,004**
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			0								**0**
1.5	Est. area that will be declared as free growing (ha)			2,000								**2,000**
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	0	0	72	0	0	183	277	91	0	88	
3.3	Est. total full time equivalent positions (FTE)	0	0	0	0	0	1	2	1	0	0	**4**
4.1	**Forest Health Enhancement (ha)**											**0**
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											**0**
5.3	Est. area with secondary value provided to biodiversity (ha)											**0**

TFL 25 (Block 5)

	Performance Measure Inputs	Tree Improvement	Nursery Seedling Production	Silv. Survey	Site prep.	Backlog Plant	Brush	Space	Prune	Fertilize	Support staff and admin	Totals
A	**Planned treatment area (ha) in 2002/2003**	0	0	0	0	0	0	0	30	0	30	
1.0	**Timber Supply**											
1.1	Potential volume/ha gain (m3/ha/yr)	0.41	0	0	0	2.9	0.41	0.25	0	0.40		
1.2	Years the factor will apply	65	65	65	65	65	65	65	65	65		
1.3	Pot. total merch. volume increment in 65 years (m3)	0	0	0	0	1	0	0	0	0		1
1.4	Est. yrs reduced to achieve management objectives	5-10	1-3	5-10	0	5-20	5	5-30	0	5-10		
1.4	Est. area that will be reclassified as stocked (ha)			0								0
1.5	Est. area that will be declared as free growing (ha)			0								0
2.0	**Wood Value**											
2.1	Percent improvement in total value at harvest (Compared to no treatment)							5-15%	15-30%	1-5%		
3.0	**Employment**											
3.1	Est. short term employment (person days/ha)	0.1	0.34	0.1	0.95	2	2.61	3.96	4.54	0.18	0.1	
3.2	Est. total employment (person days/year)	0	0	0	0	0	0	0	136	0	3	
3.3	Est. total full time equivalent positions (FTE)	0	0	0	0	0	0	0	1	0	0	1
4.1	**Forest Health Enhancement (ha)**											0
5.1	**Habitat Supply**											
5.2	Planned area for specific wildlife forage or habitat maintenance in 2002/2003 (ha)											0
5.3	Est. area with secondary value provided to biodiversity (ha)											0

North Coast District Summary

Not required because pertinent information from this table is contained in the Management Unit Summary Table (District Summary).

2.8.5.4 Studies Table

North Coast TSA

Rank	Project Name	FRBC's Cost 2002/2003
2	Broadcast fertilization screening trials in the CWH vh2 to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will provide additional information to that gathered from the WFP project.	$40,000

TFL 25 (Block 5)

Rank	Project Name	FRBC's Cost 2002/2003
1	Broadcast fertilization screening trials in the CWH vm to determine whether there will be a benefit to stand growth from fertilization. This is the third year of a 5 year study. If stand growth is improved then a follow up cost benefit analysis will be performed.	$40,000

North Coast District Summary

Rank	Project Name	FRBC's Cost 2002/2003
1	Broadcast fertilization screening trials in the CWH vm to determine whether there will be a benefit to stand growth from fertilization. This is the third year of a 5 year study. If stand growth is improved then a follow up cost benefit analysis will be performed.	$44,000
2	Broadcast fertilization screening trials in the CWH vh2 to determine whether there will be a benefit to stand growth from fertilization. If stand growth is improved then a follow up cost benefit analysis will be performed. It is anticipated that this project will provide additional information to that gathered from the WFP project.	$40,000
	TOTAL	$84,000

2.8.5.5 Management Unit Summary Table

North Coast TSA

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	90	135	135	135	135	2,355	212,000
Planning, prescriptions and seedlings							65,000
Backlog Program Field Activities	2,262	2,170	670	600	600	153	346,290
Planning, prescriptions and seedlings							20,000
Totals	2,352	2,305	805	735	735		643,290

Performance Measures

Potential total merchantable volume increment in 65 years	3,004 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	2,000 ha
Estimated total full time equivalent positions generated	4 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

TFL 25 (Block 5)

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	30	380	880	600	600	3,999	120,000
Planning, prescriptions and seedlings							44,000
Backlog Program Field Activities	0	0	0	0	0	0	0
Planning, prescriptions and seedlings							0
Totals	30	380	880	600	600		164,000

Performance Measures

Potential total merchantable volume increment in 65 years	1 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	0 ha
Estimated total full time equivalent positions generated	1 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

North Coast District Summary

	Treatment Area Goals (ha)					Plan 2002/03	
	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	Unit Cost ($/ha)	Funding ($)
Enhanced Forestry Program Field Activities	120	515	1,015	735	735	2,766	320,000
Planning, prescriptions and seedlings							121,000
Backlog Program Field Activities	2,262	2,170	670	600	600	153	346,290
Planning, prescriptions and seedlings							20,000
Totals	2,382	2,685	1,685	1,335	1,335		807,290

Performance Measures

Potential total merchantable volume increment in 65 years	3,004 m^3
Estimated ha that will be reclassified as stocked	0 ha
Estimated ha that will be declared as free growing	2,000 ha
Estimated total full time equivalent positions generated	5 FTEs
Forest health enhancement area	0 ha
Planned area for specific wildlife forage or habitat maintenance	0 ha
Estimated area with secondary value provided to biodiversity	0 ha

2.8.5.6 Woodlot Program Table

Presently, the woodlot program for the North Coast Forest District is in need of no silviculture funds since the only woodlot in the district is new with no backlog areas.

2.9 SH APPENDICES

A. MANAGEMENT UNIT RMP CONTACT AND SUPPORT PERSONNEL

Lakes
RMP co-ordinator - **Will Stadey/John Illes**
Sustainable harvest - **John Illes**

Morice
RMP co-ordinator - **Debbie Janning-Stewart**
Sustainable harvest - **Marg Shamlock**

Bulkley
RMP co-ordinator - **Bob Mitchell**
Sustainable harvest / forest health - **Bob Mitchell**

Kispiox
RMP co-ordinator – **Lisa Hanna**
Sustainable harvest / forest health – **Liz Williamson**

Kalum
RMP co-ordinator – **Bob Wilson**
Sustainable harvest - **Art Moi**

North Coast
RMP co-ordinator – **Dorothy Wharton**
Sustainable harvest - **Mike Grainger**

Regional Office
Sustainable Harvest - **Neil Endacott**

B. REFERENCES SUPPORTING SH COMPONENT

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2000. Type I Silviculture Strategy for the Morice TSA. Morice Forest District, Ministry of Forests, Houston, BC.

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1999. Type 1 Silviculture Strategy for the Kispiox TSA. Kispiox Forest District, Ministry of Forests, Hazelton, BC.

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Access Management Plan. Lakes Forest District, Ministry of Forests, Burns Lake, BC.

Incremental Silviculture Strategy for British Columbia (Interim). Ministry of Forests, BC.

Kispiox Silviculture Strategy & Funding Pressures. Kispiox Forest District, Ministry of Forests, Hazelton, BC.

Land and Resources Management Plan for the Lakes Forest District. Lakes Forest District, Ministry of Forests, Burns Lake, BC.

3.0 ENHANCING ENVIRONMENTAL VALUES (EEV)

3.1 *Regional Summary of EEV Issues and Priorities*

The provincial Watershed Restoration Program (WRP) presents a number of resource and implementation challenges in six districts of the Skeena-Bulkley Region. The WRP has been active across the Region since it's inception in 1994. The majority of the work in the first years of the program comprised mostly of instream/riparian assessments and upslope/road assessment and deactivation work. In more recent years, work has shifted towards implementing prescriptive and restorative work in the streams and riparian areas. Most (but not all) of the eligible road issues have been addressed in the priority areas to date. This said, significant investment is still planned to being directed towards road impacts that are inhibiting fish passage.

In the eastern districts, fish access has been identified as one of the major impacts to the watersheds, often the result of road crossings that were originally constructed as, or have become, barriers to fish migration. Restoration of fish access to these areas will re-establish access to many kilometers of productive habitat upstream of the crossing.

The western districts, with their unstable slopes and high-energy systems present their own unique set of challenges. Restorative activities range from road deactivation, to prevent further erosion or landslide potential, to off-channel habitat development, to riparian zone restoration that has the long term objective of developing more stable channels and diverse habitats. Re-establishing fish passage is also a priority activity in the western districts as is restorative work involving stabilization of highly mobile stream channels and gravel bars often associated with alluvial fans that were historically harvested.

The Skeena Bulkley RMP was originally developed in 1999 and has been refined and updated annually. However, the criterion used for designation of the priority watersheds for restorative investment has not changed from its original inception.

3.2 *Criteria*

A standardized plan was used as a template to reduce interpretive variation in the criteria; however, criteria were interpreted differently in some Forest Districts. A summary of each districts interpretation of the plan is provided in Section 3.2.2 of this report.

3.2.1 Regional list of criteria used to derive the relative ranking of watersheds and the designation of key watersheds

Delineation of Planning Units

The first step in the development of the RMP was to establish planning unit boundaries (see Appendix "A"). The *Guidelines for the Development of Resource Management Plans for 2001/01* provided a range for the size of planning unit that would be appropriate for the RMP. For interior watersheds, a range of 30,000 to 75,000 ha was suggested. For coastal areas, a smaller area of 10,000 to 50,000 ha was used.

As a start, Landscape Units (LUs) were examined. The LU is the basic geographic unit; based on height of land (i.e. watersheds), that is employed provincially in forest management planning. In the western districts of the region (North Coast, Kalum and Kispiox), the size of the LUs were considered appropriate for the scope of the RMP so they were adopted as the basic planning unit for the RMP development. In the eastern districts (Bulkley, Morice and Lakes), the LUs were considered too large for the RMP exercise. Consequently, the LUs were maintained and were further divided into sub-units that formed the basic planning unit.

The following table (Table 1) summarizes the number and average size of planning units used for the Skeena-Bulkley Region for the purposes of this RMP.

Table 1 -- Number and average size of planning units.

Forest District	**Number of Planning Units**	**Average Size (ha)**
Lakes	72	16,330
Morice	51	29,184
Bulkley	48	15,976
Kispiox	31	41,732
Kalum	124	32,056
North Coast	61	33,719
REGION	**387**	**27,914**

Defining the Resource Values for each Planning Unit

The fisheries and water use values were assessed for each planning unit. The purpose of examining resource values alone is to identify, on a regional basis, the KEY watersheds: those watersheds, or more accurately the planning units in which they fall, that have significant fisheries and/or domestic water use values.

The fisheries resource values were researched for each of the planning units. The information was obtained for each of the planning units (where information was available). The sources used to gather this information were:

- Fisheries Information Summary System (FISS)
- WRP Assessment Reports
- Local knowledge of Ministry of Environment, Lands and Parks (MELP) and Ministry of Forests (MoF) staff
- Stakeholder reports and local knowledge
- Other fisheries reports

The criteria used to assess fisheries values were developed using categories defined in the following three reports:

- Anonymous. 1998. *Living Blueprint for BC Salmonid Habitat*. Pacific Salmon Foundation. Published by an Independent Panel

- Haas, G.R. 1998. *Indigenous fish species potentially at risk in BC with recommendations and prioritization's for conservation forestry/resource use, inventory and research*, Fisheries Management report No. 105, Ministry of Fisheries, Vancouver, B.C.
- Cannings, SG and J. Ptolmey. 1998. *Rare Freshwater Fish of British Columbia*. Ministry of Environment, Lands and Parks, Victoria, B.C.

Using the following three categories, the status of a fish population or species in each of the landscape units and/or watersheds was determined:

Populations at High Risk of Extinction (PopHRE): Fish populations at high risk of extinction (Anon. 1998). This also includes, but is not limited to, populations that have regional conservation concerns (i.e. Skeena summer run timing coho, Kitimat eulachon etc).

Species of Provincial Significance (SpProvSign): Fish species that have been identified provincially as being particularly sensitive to forest harvesting activities (Haas 1998). In the Kalum this refers mostly to bull trout (BT), Dolly Varden (DV) and/or cutthroat trout (CT). These criteria can also include other rare species found in the Region (e.g. giant pigmy whitefish, giant black stickleback).

Population of Regional Significance (PopRegSign): Refers to populations that contribute to significant native, sport or commercial fisheries (in no order of hierarchy).

A landscape unit's *Priority for Fish* category is described (ranked) using four basic rankings: very high (VH), high (H), moderate (M), and low (L). Using the best information available, a ranking was assigned to each Landscape Unit (LU):

- If a LU contained a PopHRE then it was immediately given a **VH** ranking;
- If more than one SpProvSign were present, or one SpProvSign along with PopRegSign, then the LU was also assigned the **VH** ranking;
- If two or more PopRegSign were present, then a **H** ranking was assigned;
- If only one PopRegSign, then a **M** ranking was assigned
- Remaining LUs that did not have the previous described rankings were given an EEV Priority for Fish ranking of **L**.

This method of ranking was developed to reflect the program goals and priorities as defined by the objectives of the EEV program. Although this method of ranking was generally followed, some values were moved up or down based on detailed knowledge of a watershed and the significance of the resources in the planning unit.

Water Use

The highest rankings for domestic water use, described as very high (**VH**), were assigned to those planning units that contained a Community Watershed, as designated in the Forest Practices Code of British Columbia.

Those planning units that did not have a community watershed, but had a significant number of licensed water uses were assigned a high (**H**) ranking. Planning units with little or no domestic water use were assigned a medium (**M**) to low (**L**) ranking.

Identification of Key Landscape Units (watersheds)

A Key watershed is defined as a watershed that contains significant (ranked **VH** or **H**) fisheries values and/or significant (ranked **VH** or **H**) domestic water use. Where available, information was gathered for each LU and ranking of **KEY** was assigned to LUs that fit the criteria described above. Given the significant fisheries resources that are found throughout the Skeena-Bulkley Region, many of the planning units were unsurprisingly assigned the KEY LU ranking. Given this fact, it was decided that the KEY ranking would be revisited after the condition and eligibility of the watershed was assessed in order to present a plan that was more useful in focusing on priority watersheds.

Description of the General Condition of the Landscape Unit

The condition of the Planning Unit is a crude measure of geography and development history of the planning unit, based on available information. District Ministry of forest staff were requested to assess the Landscape units (and/or sub units), and assign low, medium, and high rankings under the following headings:

Past Development ranking was based on the extent of past harvesting within the LU.
Probability of Future Impacts ranking was based on professional judgement of the LU's geography, harvesting history, and experience with planning units that have a similar, more extensive harvesting history in the area. This criterion was used to assess the probability that negative affects to the aquatic resources from historical harvesting practices that, although not currently apparent, may occur in the future.
Probability of Success ranking was based on professional judgement of the LU's geography, identified impairments to its' aquatic habitat, and work required to rehabilitate the impacts. This category often relates to the overall stability of the drainage, energy of the river/stream system, bedload movement, and the type of restorative work proposed.

Assign the Stage of Work within the Planning Unit

A value of 0 to 4 was assigned based the following definitions:

Stage 0: No WRP activities initiated
Stage 1: Overview assessment completed
Stage 2: Detailed assessments/prescriptions/survey and design completed for selected sites in the planning unit
Stage 3: Works, maintenance and evaluation underway or immediately scheduled
Stage 4: Monitoring and evaluation of works completed/no more work recommended

Summary of the RMP Development Process by District

As stated in the introduction, since the RMP's initial implementation in 1999, slight variations in the overall development of the RMP occurred in each Planning District within the Region. These variations are described as follows:

Lakes Forest District

Fisheries information was provided on a Watershed "Sub Unit" level. District MoF staff completed the RMP tables and assigned the rankings with input from the district proponents for the EEV program. Extensive changes were made to the 2000 – 2001 LU sub unit rankings. The changes were based on updated resource information that was provided to the delivery agencies in the summer of 2000. The RMP was modified to incorporate the data and final rankings for the information and was rolled into this 2001-2002 regional RMP. Targeted subunits were determined by the FRBC Regional staff in consultation with the Multi Year Agreement (MYA) holders based in the district.

Morice Forest District
Resource information was provided on a LU level. The LUs were then ranked by both MoF and MELP Regional staff and then further divided into watershed sub-units. The information presented in the RMP document is at the Landscape Unit level and unless detailed resource information was available the watershed sub-units were assigned the same criteria values as the entire Landscape Unit. The sub-units should be re-ranked, based on sub-unit level information. For the 2002-2003 RMP, specific recommendations from stakeholders necessitated the LU rankings of three sub units (Morice Lake, Atna and Upper Morice River) to be changed from Targeted subunits to Key subunits due to limited "pre code" harvesting in those areas. Subsequently an additional Priority Key Sub-Unit (Morrison) was designated as Targeted due to its' resource priorities and the opportunities for rehabilitation of fisheries resource values.

Bulkley-Cassiar Forest District
Resource information for the 2002–2003 EEV RMP was completed by MELP regional and MoF district staff. Meetings were held with the EEV MYAs, MoF, and FRBC and the final rankings were assigned. One Sub-Unit (Blunt) was designated a Priority Key LU from a Targeted Sub-Unit for the 2002-2003 RMP.

Kispiox Forest District
MELP and MoF district staff completed the RMP in the Kispiox for 2000-2001. The assigned rankings were agreed to by both agencies and will be used unchanged for the 2002-2003 RMP. One Sub-Unit (Upper Cranberry) was changed from a Targeted Sub-Unit to a Priority Key for this 2002-2003 RMP.

Kalum Forest District
District staff for both MoF and MELP are administering EEV activities in the Kalum District. These agency representatives sought input from the current district MYAs, entered the RMP data as per the guidelines and submitted the final ranking for the regional compilation. Targeted LUs were designated by FRBC in consultation with the MYAs (and their Implementing Partners where applicable).

North Coast Forest District
The LU designation exercise was completed for the 2000-2001 RMP by MoF district staff in consultation with district proponents. Representatives of MELP reviewed the RMP data, held discussions with MoF staff, and agreed to the final rankings for the 2001-2002 document.

3.2.2 The criteria used to designate key watersheds into categories I-V

The document *2002-03 Resource Management Plan Guidelines for the Watershed Restoration Program in Support of Forest renewal BC's Enhancing Environmental Values Strategic Objective* provided a category system that assigned values to each LU. The rationale behind this ranking is to assess, to some extent, the eligibility or requirement of FRBC funding and other funding sources for restoration purposes. The definitions for the categories each LU was assigned are as follows:

Category I: *Watersheds that have known impacts from pre-Code forestry but are still functional watersheds that will potentially benefit from restoration activities.*

These watersheds are known to have experienced forestry-related habitat impairment or water-quality degradation in at least a portion of the watershed, or are believed to have a forestry related threat to fish habitat or water quality, but there are still significant areas of good quality habitat. It is believed that restoration activity can be rapidly focused on improving conditions or preventing damage before it occurs (e.g., roads with high risk of failure). Category I watersheds can also include those portions of a watershed that contain important identified species and are upstream of agricultural or urbanized areas, or supply water to a community intake that is upstream of other land uses. Where the important habitat areas are affected by *other* land uses, the watershed is not Category I. This category may include watersheds where restoration activity has previously occurred.

Category II: *Watersheds with impacts from pre-Code forestry as well as other land uses (including private land) and where there is a coordinated restoration plan in place. The watershed must still be functional and able to benefit from coordinated activity.*

Restoration will require a coordinated approach to address all of the land-use impacts. WRP activities in Category II watersheds must be coordinated with other funding sources, such as Fisheries Renewal or HRSEP, in order to significantly affect fish recovery or water quality improvement. This category may include watersheds where restoration activity has previously occurred.

Category IIB: *Watersheds with significant impacts from other land use, including private land, but where there is no coordinated restoration plan in place.*

Restoration of these watersheds through activity only in the forest land will potentially provide low benefit because of impacts from other land uses such as agriculture, mining or residential development.

Category III: *Watersheds with minimal or no "pre-Code" forestry-related impairment of fish habitat or water quality.*

In these cases, restoration activity may not be required or may not be cost effective in relation to a small, incremental improvement in fish or water quality. This category includes watersheds with little or no forest development.

Category IV: *Watersheds known to be impacted to such an extent that a restoration effort is unlikely to be successful.*

These watersheds are believed to have experienced such extensive habitat or hillslope damage that expenditures will be so high, and restoration time so slow, that it may not be technically feasible or cost-effective to restore them.

Category V: *Watersheds with insufficient data to make a determination.*

Watersheds with no assessment surveys are temporarily on hold and are subject areas for overview assessments. They do not become candidate watersheds for restoration activity until more is known about their status, but they are **not** rejected at this point either.

Final Ranking Process

Moderate Priority Watershed Units:

Based on the program objectives, watershed units with lower fisheries resources and domestic water use are ranked as Moderate Priority Watershed Units.

Key Watershed Units:

These are regionally significant watershed units that contain high or very high values of targeted fish species/stock or are important domestic water supply sources but are not considered category I or II as described above.

Priority Key Watershed Units(PK):

These are Category I and II watersheds that:

- have known impacts from Pre-Code forestry, and
- have been estimated to have a high likelihood of restoration success.

Target Watershed Units:

These are a subset of the Priority Key(PK) Watersheds that had interim restoration plans completed in 2000/2001.

Based on interim restoration plans, a smaller subset (44 of the watersheds that have a high likelihood of major works completed by March 2004) of PK watersheds will have Restoration Plans completed in 2001/2002. Our regional goal is to complete the "major works" on 38 PK watersheds or 20% of the PK watershed units in the region.

Watershed Completion :

Watershed completion occurs when all the higher-priority major works identified in restoration plans are implemented and completed according to standards.

Based on the interim restoration plans and consultation with proponents, there are approximately 18 priority key watersheds that now have/or will have "major works" completed in 2001/2002. Completion reports will be prepared for these watersheds in 2001/2002. It is expected that these watersheds will contribute to our 20% strategic goal.

3.3 Table 2 – *Regional* Watershed Unit Summary

Region: Prince Rupert	Number of Watershed Units
Key watershed units that are Category I	209
Key watershed units that are Category II	20
Key watershed units that are Category IIB	0
Key watershed units that are Category III	111
Key watershed units that are Category IV	2
Key watershed units that are Category V	45
Number of Key Watershed Units (Sum of key categories I - V)	387

Total Number of priority key watershed units	189
Total Number of Targeted watershed units	94
Total Number of watershed units (key and non key)	387

3.4 Table 3. Regional Project Summary

3.4.1 Lakes Forest District

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
La	Babine East	Four Mile	L	H			SK RB	Yes	No	Babine FP	KKBC
La	Babine East	Gullwing	L	H			SK RB	Yes	No	Babine FP	
La	Babine East	Sutherland	L	H		RB	SK unique RB pop	Yes	No	Babine FP	
La	Babine West	Froggy-South	M	H			SK RB	Yes	No	Babine FP	
La	Babine West	Pendleton	H	H			SK RB	Yes	No	Babine FP	
La	Babine West	Pierre	M	H			SK RB	Yes	No	Babine FP	
La	Babine West	Twain	M	H			SK RB	Yes	No	Babine FP	
La	Babine West	Upper Pinkut	M	H			SK RB	Yes	No	Babine FP	
La	Bulkley	Broman	H	VH	CO	BT CT	CH ST RB	Yes	Yes	Babine FP	
La	Bulkley	Crow-Foxy	H	H	CO	BT CT	CH ST RB	Yes	Yes	Babine FP	
La	Bulkley	Day Lake	H	H	CO	BT CT	CH ST RB	Yes	Yes	Babine FP	
La	Bulkley	Maxan	M	VH	CO	BT CT	CH ST RB	Yes	Yes	Babine FP	
La	Bulkley	Upper Foxy	M	H	CO	BT CT	CH ST RB	Yes	Yes	Babine FP	
La	Burns Lake East	Burns	H	H			CH RB	Yes	Yes	Babine FP	
La	Burns Lake East	Cheskwa	H	H			CH RB	Yes	Yes	Babine FP	
La	Burns Lake East	Sheraton	H	H			CH RB	No	No	Babine FP	
La	Burns Lake East	Shovel	M	VH			CH RB	Yes	Yes	Babine FP	
La	Burns Lake East	Tchesinkut E.	H	H			CH RB	Yes	Yes	Babine FP	
La	Burns Lake East	Tercer	H	H			CH RB	Yes	Yes	Babine FP	
La	Burns Lake West	Decker Stearns	H	M			RB	Yes	Yes	Babine FP	
La	Burns Lake West	Eagle Ck.	H	M			RB	Yes	Yes	Babine FP	
La	Burns Lake West	Gerow	H	M			RB	Yes	Yes	Babine FP	
La	Burns Lake West	Palling	H	H			RB	Yes	Yes	Babine FP	
La	Burns Lake West	Tchesinkut W.	H	M			RB	Yes	Yes	Babine FP	
La	Chelaslie	Chelaslie Arm	L	H			RB	No	No	FLSM	
La	Chelaslie	Chief Louie	L	M			RB	No	No	FLSM	
La	Chelaslie	Tetachuck Eu	L	M			RB	No	No	FLSM	
La	Chelaslie	Tetachuck N	L	M			RB	No	No	FLSM	
La	Chelaslie	Uduk	L	M			RB	No	No	FLSM	

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
La	Chelaslie	White Eye	M	H			RB	Yes	No	FLSM	
La	Cheslatta	Bird	M	M		BT	RB	No	No	FLSM	
La	Cheslatta	Cheslatta	H	H		BT	RB	Yes	No	FLSM	
La	Cheslatta	Davidson	M	M		BT	RB	No	No	FLSM	
La	Cheslatta	Enz	M	M		BT	RB	No	No	FLSM	
La	Cheslatta	Knapp	M	H		BT	RB	Yes	No	FLSM	
La	Cheslatta	Marilla	M	H		BT	RB	No	No	FLSM	
La	Cheslatta	Ootsanee	M	H		BT	RB	Yes	Yes	FLSM	
La	Entiako	Bryan Arm	L	L			RB	No	No	N/A	
La	Entiako	Captain Harry	L	L			RB	No	No	N/A	
La	Entiako	Entiako Lake	L	L			RB	No	No	N/A	
La	Entiako	Entiako River	L	L			RB	No	No	N/A	
La	Entiako	Euchu	L	L			RB	No	No	N/A	
La	Entiako	McGibbon	L	L			RB	No	No	N/A	
La	Entiako	Tetachuck S.	L	L			RB	No	No	N/A	
La	Fleming	Fleming Ck.	L	H		BT	SK RB	Yes	Yes	Babine FP	
La	Fleming	Lower Tildesly	L	H		BT	SK RB	Yes	Yes	Babine FP	
La	Fleming	Upper Tildesly	L	H		BT	SK RB	Yes	Yes	Babine FP	
La	Francois East	Binta	M	H			RB	Yes	No	FLSM	
La	Francois East	Binta- North	L	L			RB	No	No	FLSM	
La	Francois East	Haney	H	M			RB	Yes	No	FLSM	
La	Francois East	Red Hills	H	M			RB	Yes	No	FLSM	
La	Francois East	Takysie	H	M			RB	Yes	No	FLSM	
La	Francois East	Uncha	H	M			RB	Yes	No	FLSM	
La	Francois West	Allin Ck.	H	H			RB LT	Yes	No	Babine FP	
La	Francois West	Evans	H	H			RB LT	Yes	No	Babine FP	
La	Francois West	Henkel	H	H			RB LT	Yes	No	Babine FP	
La	Francois West	Issac	M	M			RB LT	No	No	FLSM	
La	Francois West	Katherine Lk.	H	M			RB LT	Yes	No	FLSM	
La	Francois West	Ramsey	H	H			RB LT	Yes	No	Babine FP	
La	Francois West	Tatalrose	H	M			RB LT	Yes	No	FLSM	
La	Intata	Henson	H	M			RB	Yes	Yes	FLSM	
La	Intata	Intata Reach	L	H			RB	No	Yes	FLSM	
La	Intata	Natalkuz	L	H			RB	Yes	Yes	FLSM	
La	Intata	Ootsa-Intata	M	H			RB	Yes	Yes	FLSM	

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
La	Ootsa	Ootsa	H	H			RB	Yes	No	FLSM	
La	Ootsa	Ootsa South	L	L			RB	No	No	FLSM	
La	Ootsa	Square Lk.	M	M			RB	No	No	FLSM	
La	Taltapin	Augier/Pinkut	H	H		BT	SK	Yes	Yes	Babine FP	
La	Taltapin	Donald Ldg	H	H		BT	SK	Yes	Yes	Babine FP	
La	Taltapin	Helene	M	H		BT	SK	Yes	Yes	Babine FP	
La	Taltapin	Henrietta	M	H		BT	SK	Yes	Yes	Babine FP	
La	Taltapin	Taltapin	H	H		BT	SK	Yes	Yes	Babine FP	

3.4.2 Morice Forest District

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Mo	Buck	Aitken Creek	VH	VH				Yes	Yes	HFP/CANFOR	
Mo	Buck	Buck Creek	VH	VH	CO		CH ST MW RB	Yes	Yes	HFP/CANFOR	
Mo	Buck	Dungate Creek	VH	VH				Yes	Yes	HFP/CANFOR	
Mo	Burnie	Burnie	L	M		CT	RB KO DV MW BB	No	No		
Mo	Clore	Clore	L	H				No	No		
Mo	Fulton	Fulton River	H	VH	CO	CT	SK PK CH MW RB	Yes	No		
Mo	Fulton	Guess Creek	M	VH		CT		Yes	No		
Mo	Fulton	Tanglechain Cr	M	VH		CT	BB LT MW RB	Yes	No		
Mo	Gosnell	Gosnell Creek		VH	CO	CT BT	CH PK ST MW RB	No	No		
Mo	Gosnell	Shea Creek		VH	CO	CT BT	ST MW RB	No	No		
Mo	Granisle	Babine L/Granisle	H	VH	CO		SK RB DV	No	No		
Mo	Houston-Tommy	Upper Morice River		VH	CO	BT CT	SK CH ST PK MW RB	No	No		
Mo	Houston-Tommy	Houston-Tommy Creek		VH	CO		ST PK	Yes	Yes	HFP/CANFOR	
Mo	Kidprice	Kidprice Lake		VH		BT	RB	Yes	No		
Mo	Kidprice	Lamprey		VH	CO	BT CT	ST MW RB	Yes	Yes	HFP/CANFOR	
Mo	Kidprice	Nado/Cedric		VH	CO	CT	CH RB	Yes	Yes	HFP/CANFOR	
Mo	Kidprice	Nanika River		VH	CO	BT CT	CH ST SK RB MW LW BB	Yes	Yes	HFP/CANFOR	
Mo	Morice Lake	Atna Lake\Creek		VH	CO		SK LT MW	No	No		
Mo	Morice Lake	Morice Lake		VH	CO	CT BT	SK ST CH BB RB MW LW	No	No		
Mo	Morice Lake	Morice River-Upper		VH	CO	CT BT	CH PK SK ST KO MW RB	No	No		
Mo	Morrison	Babine Lake - Morrison		VH	CO		SK RB DV	Yes	No		
Mo	Morrison	Morrison Lake		VH	CO	CT	SK KO BB LT LW MW RB	Yes	Yes	HFP/CANFOR	
Mo	Nadina	Nadina Lake	M	H			SK KO MW RB	Yes	No		
Mo	Nadina	Nadina River	M	H			CH SK MW RB BB	Yes	Yes	HFP/CANFOR	
Mo	Nadina	Tagetochlain Lake	M	H			BB LT LW MW RB	Yes	No		
Mo	Nanika	Nanika Lake		H		BT CT	RB LT SK	Yes	No		
Mo	North Babine	Babine Lake - N. Babine		VH	CO		SK RB DV	Yes	No		
Mo	North Babine	Big Loon Creek		VH	CO		SK BB KO MW RB	Yes	No		
Mo	Owen	Fenton Creek		VH	CO		ST	Yes	Yes	HFP/CANFOR	
Mo	Owen	Owen Creek		VH	CO	BT	ST MW RB	Yes	Yes	HFP/CANFOR	
Mo	Owen	Peacock Creek\Morice		VH	CO			Yes	Yes	HFP/CANFOR	
Mo	Parrott	Parrot Creek	M	M			BB LT MW RB	No	No		

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Mo	Sibola	Sibola		M			DV MW RB	No	No		
Mo	Tahtsa	Tahtsa		M			KO DV RB MW	No	No		
Mo	Thautil	Chisholm		VH	CO	BT		No	No		
Mo	Thautil	Starr Creek		VH			ST	No	No		
Mo	Thautil	Thautil River		VH	CO	BT CT	CH PK ST MW RB	No	No		
Mo	Tochcha/Natowite	Gloyazikut Creek		M				No	No		
Mo	Tochcha/Natowite	Hautete Creek		M			KO MW	No	No		
Mo	Tochcha/Natowite	Natowite Lake		M		BT	KO LT MW RB	No	No		
Mo	Tochcha/Natowite	Tochcha Lake		M		BT	KO MW RB	No	No		
Mo	Topley	Babine Lake - Topley	H	H	CO		SK RB	No	No		
Mo	Topley	Tachek Creek	H	H	CO		SK KO MW RB	No	No		
Mo	Troitsa	Troitsa		M			BB RB	No	No		
Mo	Valley	Barren Creek	VH	VH			RB	Yes	No		
Mo	Valley	Bulkley River	VH	VH	CO	BT CT	SK CH ST PK MW RB	Yes	No		
Mo	Valley	Byman Creek	VH	VH	CO		CH ST RB	Yes	No		
Mo	Valley	Emerson Creek	VH	VH				Yes	No		
Mo	Valley	McQuarrie Creek	VH	VH	CO		ST RB	Yes	No		
Mo	Valley	Richfield Creek	VH	VH	CO		CH ST RB	Yes	No		
Mo	Whitesail	Whitesail		M			RB KO MW BB	No	No		

3.4.3 Bulkley-Cassiar Forest District

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Bu	Babine	Babine	M	VH	CO	BT,CT	SK ST RB	Yes	Yes	PIR	
Bu	Babine	Boucher	M	VH	CO	CT	CH SK PK ST RB	Yes	No		
Bu	Babine	E. Nichyeskwa	M	H	CO	BT	CH SK PK MW RB	Yes	No		
Bu	Babine	Nilkitkwa Lake	M	VH	CO	BT,CT	SK ST RB	Yes	Yes	PIR	
Bu	Babine	Nilkitkwa R.	M	H	CO	BT	CH SK ST MW RB	Yes	No		
Bu	Blunt	Blunt	M	H	CO	CT BT	ST MW	Yes	No	SCI	
Bu	Blunt	U. Harold Price	L	M				No	No	SCI	
Bu	Bulkley	Bulkley Valley	VH	H	CO	BT	CH ST SK PK RB	Yes	No		
Bu	Chapman	Fulton	M	M		CT	BB LW LT MW	No	No		
Bu	Chapman	McKendrick	M	M		CT		No	No		
Bu	Copper	Caribou	L	H				Yes	No		
Bu	Copper	Copper	L	H	CO	CT	SK DV ST MW RB	Yes	No		
Bu	Copper	Hankin	L	H	CO	CT	ST DV RB	Yes	No		
Bu	Copper	Lee	L	M				No	No		
Bu	Copper	Mulwain	L	M				No	No		
Bu	Copper	Serb	L	M			DV ST	No	No		
Bu	Copper	Silvern	L	H	CO	BT	SK ST DV	Yes	No		
Bu	Corya	Boulder	H	M				Yes	No	Canfor	
Bu	Corya	Corya	VH	M			DV RB	Yes	No	Canfor	
Bu	Corya	John Brown	VH	H		CT BT	CH ST RB	Yes	No	Canfor	
Bu	Deep Creek	Deep Creek	H	M				Yes	No		
Bu	Deep Creek	Robin Creek	M	M				No	No		
Bu	Deep Creek	Thompson	L	M				No	No		
Bu	Harold Price	Lower H. P.	M	VH	CO	CT	CH ST DV MW RB	Yes	No	SCI	
Bu	Harold Price	Touhy	M	H		CT	ST DV	Yes	No	SCI	
Bu	Kitseguecla	Kitseguecla	M	H	CO	CT, BT	CH SK ST RB	Yes	No	PIR	
Bu	Reiseter	Canyon	VH	H	CO		DV RB ST	Yes	No		
Bu	Reiseter	Causqua	H	M			PK	Yes	No		
Bu	Reiseter	Reiseter	H	H	CO		RB	Yes	No		
Bu	Telkwa	Amett	H	VH	CO	BT	PK ST MW	Yes	No	PIR	
Bu	Telkwa	Bridge	H	VH	CO	BT	PK ST MW	Yes	No	PIR	
Bu	Telkwa	Cumming	H	VH	CO	BT	PK ST MW	Yes	Yes	PIR	

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Bu	Telkwa	Elliot	H	VH	CO			Yes	No	PIR	
Bu	Telkwa	Goathorn	H	VH	CO	BT	PK ST MW	Yes	Yes	PIR	
Bu	Telkwa	Howson	H	VH	CO	CT	PK ST DV	Yes	No	PIR	
Bu	Telkwa	Jonas	H	M				Yes	Yes	PIR	
Bu	Telkwa	Lower Telkwa	VH	M	CO	BT		Yes	Yes	PIR	
Bu	Telkwa	Milk	M	VH	CO	BT	PK ST MW	No	No	PIR	
Bu	Telkwa	Pine	VH	M				Yes	No	PIR	
Bu	Telkwa	Sinclair	M	H		CT BT	PK MW	No	No	PIR	
Bu	Telkwa	Tsai	M	H	CO	BT		No	No	PIR	
Bu	Telkwa	Upper Telkwa	H	H	CO	BT		No	No	PIR	
Bu	Telkwa	Winfield	M	M		BT		No	No	PIR	
Bu	Torkelson	Torkelson	L	M		CT		No	No		
Bu	Torkelson	Tsezakwa	L	H	CO		SK PK	Yes	Yes	PIR	
Bu	Torkelson	West Babine	L	H		BT	SK RB	Yes	Yes	PIR	
Bu	Trout Creek	Toboggan	VH	VH	CO	CT BT	ST PK MW RB	Yes	Yes	PIR	
Bu	Trout Creek	Trout	H	VH	CO	CT	ST PK	Yes	Yes	PIR	

3.4.4 Kispiox Forest District

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Ki	Atna	Atna		VH	SR COo	BT, CT	SR ST	No	No		
Ki	Babine Bulkley	W. Nichyeskwa	M	H	CO		CH SK PK DV MW RB	Yes	No		
Ki	Babine River	Babine River	H	VH	SR CO	BT, CT	SR ST	No	No		
Ki	Cranberry River	Cranberry River		VH	SR Co	BT,	SR ST	Yes	Yes	MoF	
Ki	Deep Canoe	Deep Canoe		M				No	No		KKBC
Ki	Gail	Gail		VH	SR CO	BT, CT	SR ST	No	No		Haisla
Ki	Hanawald	Hanawald		M				No	No		Haisla
Ki	Hazelton	Hazelton	VH	VH	SR CO	BT, CT	SR ST	No	No		
Ki	Juniper	Juniper	VH	M		BTt, CTt		No	No		
Ki	Kispiox	Kispiox	H	VH	SR CO	BT, CT	SR ST	Yes	Yes	MoF	
Ki	Kitseguecla	Kitseguecla	VH	VH	SR CO	BT	SR ST	Yes	Yes	MoF	
Ki	Kitwancool	Kitwancool		VH	SR CO	BTt, CT	SR ST	Yes	No		KKBC
Ki	Kitwanga	Kitwanga	VH	VH	SR CO	BT, CT	SR ST	Yes	Yes	MoF	
Ki	Kuldo	Kuldo		VH	SR CO	BT, CT	SR ST	No	No		
Ki	Larkworthy	Larkworthy		VH	SR CO	BT, CT	SR ST	No	No		
Ki	McCully	McCully	VH	VH	SR CO	BT, CTt	SR ST, CH, CM	No	No		
Ki	Moonlit	Moonlit	H	VH	SR CO	BT, CT	SR ST	Yes	No		
Ki	Natlin	Natlin		VH	SR CO	BT, CT	SR ST	Yes	Yes	MoF	
Ki	Seven Sisters	Seven Sisters		M		BT, CT		No	No		KKBC
Ki	Shedin	Shedin		VH	SR CO	BT, CT	SR ST	No	No		Haisla
Ki	Shegunia	Shegunia		VH	SR CO		SR ST	Yes	No		
Ki	Sheladams	Sheladams		VH	SR CO	BT, CT	SR ST	No	No		KKBC
Ki	Shelagyote	Shelagyote		VH	SR CO	BT, CT	SR ST	No	No		
Ki	Sicinteen	Sicinteen		VH	SR CO	BT, CT	SR ST	No	No		
Ki	Skeena Crossing	Skeena Crossing	VH	VH	SR CO	BT, CT	SR ST	No	No		
Ki	Skeena West	Skeena West		VH	SR CO		SR ST	No	No		
Ki	Suskwa	Suskwa	H	VH	SR COo	BT, CT	SR ST	Yes	Yes	MoF	
Ki	Sweetin	Sweetin		VH	SR CO	BT, CTt	SR ST	Yes	No		
Ki	Tenas	Tenas		VH	SR CO	BT, CT	SR ST	Yes	No		
Ki	Upper Cranberry	Upper Cranberry		VH	SR CO	BT	SR ST	Yes	No		Haisla
Ki	Upper Kispiox	Upper Kispiox		VH	SR CO	BT, CT	SR ST	Yes	Yes	MoF	

3.4.5 Kalum Forest District

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Ka	Ansedegan	Ansedegan		H			Co,Pk,Cm	Yes	Yes	NTC	
Ka	Barrie North	Barrie North		M			Co,Pk,Cm,Ch,Eu	No	No	West Fraser	
Ka	Barrie South	Barrie South		M				No	No	West Fraser	
Ka	Beaver	Beaver		VH	SR ST	DV	Ch,Co,Pk,Rt	Yes	Yes	SCI	
Ka	Bish	Bish		H		CT	Co,Pk,Cm,St	No	No	West Fraser	
Ka	Bowser Lake	Bowser Lake		H			Sk,Co,St,Rb,Mw	No	No	NTC	
Ka	Bowser Lower	Bowser Lower		M			Co,Ch,St,Rb,Mw	No	No	NTC	
Ka	Bowser Upper	Bowser Upper		M			Co,Ch,Mw,Rb	No	No	NTC	
Ka	Brown Bear	Brown Bear		H		DV	Sk,Co,Pk,Ch,St,Rb	Yes	No	NTC	
Ka	Cambria Icefields	Cambria Icefields		L				No	No	NTC	
Ka	Cecil	Cecil		VH		CT, ST, DV	Co,Pk,Cm,Ch,St,Rb	Yes	Yes	West Fraser	
Ka	Cedar	Cedar		VH	SPRCh,SR ST	DV	Sk,Co,Ch,St,Rb	Yes	Yes	SCI	
Ka	Chimdemash	Chimdemash		H		DV	Co,Pk	Yes	No	SCI	
Ka	Chist	Chist		VH			St,Ch,Co,Sk,Cm,Pk	Yes	No	West Fraser	
Ka	Clear	Clear		VH	SPRCh	DV	Sk,Co,Ch,St,Rb	Yes	Yes	SCI	
Ka	Cleft	Cleft		M		DV	Dv,Rb	No	No	NTC	
Ka	Clore	Clore	L	VH	SR CO		Ch,Co,Mw	Yes	Yes	SCI	
Ka	Copper Lower	Copper Lower	M	VH	SR CO	DV	St,Ch,Co,Cm,Pk,Rb	Yes	Yes	SCI	
Ka	Craven	Craven		M		BT	Co,Ch,Mw,St,Rb	No	No	NTC	
Ka	Dala	Dala		H			Co,Pk,Cm,Ch,St,Eu	Yes	No	West Fraser	
Ka	Damochax Lake	Damochax Lake		H		DV	St,Sk,Co,Ch,Rb	No	No	NTC	
Ka	Dasque	Dasque		H			Co,Pk,Cm,Ch	Yes	No	SCI	
Ka	Davies	Davies		H		BT,CT	Co,Cm,Ch,St	Yes	No	West Fraser	
Ka	Deltaic	Deltaic		H		BT,CT	Sk,Co,Ch,St,Rb,Mw	No	No	NTC	
Ka	Ear	Ear		M			Co,Cm,Ch	No	No	West Fraser	
Ka	Exchamsiks	Exchamsiks		H			Co,Pk,Cm,Ch,St	No	No	SCI	
Ka	Exstew	Exstew		H			Co,Pk,Cm,Ch,St,Mw	Yes	Yes	SCI	
Ka	Falls	Falls		H		CT	Co,Pk,Cm	No	No	West Fraser	
Ka	Fiddler	Fiddler		H		BT	St,Ch,Cm,Co,Pk,Rb	No	No	SCI	
Ka	Foch	Foch		H			Co,Pk,Cm,Ch	No	No	West Fraser	
Ka	Fuhr	Fuhr		H			Sk,Co,Ch,Cm,Pk,St,Rb	No	No	NTC	
Ka	Gilttoyees	Gilttoyees		H		CT	Co,Pk,Cm,St	No	No	West Fraser	
Ka	Ginlulak	Ginlulak		H		DV	Co,Cm,Pk,Rb	Yes	Yes	NTC	

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Ka	Gitnadoix	Gitnadoix		H			Ch,Co,St,Cm,Pk	No	No	West Fraser	
Ka	Greenville	Greenville		H			Co,St	Yes	Yes	NTC	
Ka	Hardscrabble	Hardscrabble		H			Pk,Mw	Yes	Yes	SCI	
Ka	Hawkesbury Island East	Hawkesbury Island East		M		CT	Sk,Co,Pk,Cm	No	No	West Fraser	
Ka	Hawkesbury Is. West	Hawkesbury Is. West		M		CT	Sk,Co,Pk,Cm	No	No	West Fraser	
Ka	Hirsch	Hirsch		H		CT, DV	Ch,Cm,Pk,St	Yes	Yes	West Fraser	KVBC
Ka	Horetzky	Horetzky		M		BT,CT	Co,Pk,Ch,Cm	No	No	West Fraser	
Ka	Hot Springs	Hot Springs		H			Sk,Co,Pk,Ko	Yes	No	SCI	
Ka	Hub	Hub		M				No	No	NTC	
Ka	Humphrys	Humphrys		VH		BT,CT	ST,L,Co,Pk,Ch,Cm	Yes	Yes	West Fraser	KVBC
Ka	Hunter	Hunter		H		DV	Dv,Co,Ch,Cm	Yes	No	West Fraser	
Ka	Icy	Icy		M				No	No	West Fraser	
Ka	Irving	Irving		H			Sk,Co,Ch,St,Rb,Mw	Yes	Yes	NTC	
Ka	Ishkheenickh	Ishkheenickh		VH		CT	Sk,Co,Pk,Cm,Ch,Rb,ST	Yes	Yes	NTC	
Ka	Jesse	Jesse		H		CT	Co,Pk,Cm	No	No	West Fraser	
Ka	Kalitan	Kalitan		M		CT	Sk,Co,Ch	No	No	West Fraser	
Ka	Kalum Lower	Kalum Lower		VH	SR CO	CT	SRST,Ch.Cm,ST,Sk,Pk	Yes	Yes	SCI	
Ka	Kapella	Kapella		M			Co,Cm,Ch	No	No	West Fraser	
Ka	Kaskis	Kaskis		H			Sk,Co,Pk,Cm,Ch,ST	No	No	West Fraser	
Ka	Kemano River	Kemano River		VH			Sk,Co,Pk,Cm,Ch,ST,Eu	Yes	No	West Fraser	
Ka	Kildala	Kildala		H			St,Co,Pk,Cm,Ch,Eu	Yes	No	West Fraser	
Ka	Kinskuch	Kinskuch		H		BT*	Co,Pk,Cm,ST,Rb	Yes	No	NTC	
Ka	Kiteen Lower	Kiteen Lower		VH		BT	Co,Pk,Ch,ST,Rb	Yes	Yes	NTC	
Ka	Kiteen Upper	Kiteen Upper		H		BT,CT	Co,Rb*	Yes	No	NTC	
Ka	Kitimat Upper	Kitimat Upper		H		BT,CT, DV	Co,Ch,Cm,ST,Rb	No	No	West Fraser	
Ka	Kitlope Lake	Kitlope Lake		M			Sk,Ch,Co	No	No	West Fraser	
Ka	Kitlope Upper	Kitlope Upper		M				No	No	West Fraser	
Ka	Kitnayakwa	Kitnayakwa	L	VH		BT,CT	Ch,St	Yes	Yes	SCI	
Ka	Kleanza	Kleanza		H			SRST,Ko,Mw,Rb,Co	Yes	No	SCI	
Ka	Konigus	Konigus		M		BT	Mw,Rb,St	No	No	NTC	
Ka	Kot	Kot		M		BT	Rb*	No	No	NTC	
Ka	Kotsinta	Kotsinta		M		DV	Ch	No	No	NTC	
Ka	Kowesas	Kowesas		M		BT	Co,Pk,Cm,Ch,Eu	No	No	West Fraser	
Ka	Ksedin	Ksedin		H		DV	Co,Pk,Cm	Yes	Yes	NTC	
Ka	Kwinageese	Kwinageese		M		BT	St,Co,Ch,Cm,Sk	No	No	NTC	

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Ka	Kwinamuck	Kwinamuck		M		BT CT		No	No	NTC	
Ka	Kwinatahl	Kwinatahl		H				Yes	Yes	NTC	
Ka	Lakelse River	Lakelse River		VH	SRST	DV	Ch,Co,Sk,St,Pk,Cm,Rb,Mw	Yes	Yes	KBC	
Ka	Legate	Legate		H			Co,Pk,St,Rb	Yes	No	SCI	
Ka	Limonite	Limonite	L	H			St,Co,Ch	Yes	No	SCI	
Ka	Lipsconesit	Lipsconesit		H			Sk,Co,Ch,Cm,Pk,St,Rb	No	No	NTC	
Ka	Little Wedeene	Little Wedeene		VH		ST, CT, DV	Ch,Co,St,Pk,Cm,Rb	Yes	Yes	West Fraser	KVBC
Ka	Madley	Madley		M			Co,Rb	No	No	NTC	
Ka	Maroon	Maroon		H		BT,CT	Co,Dv,Rb	No	No	KBC	
Ka	Mayo	Mayo		H		BT,CT	Sk,Co,Dv,Rb	No	No	KBC	
Ka	McKay	McKay		H		BT,CT	St,Dv,Sk,Co,Pk,Cm,Ch	Yes	No	West Fraser	
Ka	Meziadin Lake	Meziadin Lake		H			Sk,Co,Rb,Ko,Mw	Yes	Yes	NTC	
Ka	Muskaboo	Muskaboo		M		BT, DV	Rb	No	No	NTC	
Ka	Nass Headwaters	Nass Headwaters		M			Mw,Rb,St	No	No	NTC	
Ka	Nass River Kalum	Nass River Kalum		VH			Sk,Co,Ch,Cm,Pk,St,Rb,Eu	Yes	No	NTC	
Ka	Nass West	Nass West		M				No	No	NTC	
Ka	Nelson	Nelson		H		BT,DV	Co	Yes	Yes	KBC	
Ka	Oweegee	Oweegee		H		DV	Sk,Co,Ch,Dv,Mw,Rb	Yes	Yes	NTC	
Ka	Owl	Owl		M		BT,CT	Mw*	No	No	NTC	
Ka	Owyacumish	Owyacumish		M			Co,Pk,Cm,Ch	No	No	West Fraser	
Ka	Panorama	Panorama		M		BT	Rb*	No	No	NTC	
Ka	Paw	Paw		M		DV	Rb	No	No	NTC	
Ka	Ritchie	Ritchie		M		DV	Rb	No	No	NTC	
Ka	Rochester	Rochester		M		BT		No	No	NTC	
Ka	Sallysout	Sallysout		M		BT, DV	Co	No	No	NTC	
Ka	Sanskisoot	Sanskisoot		M		BT		No	No	NTC	
Ka	Sanyam	Sanyam		H			Sk,Co,Ch,Cm,Pk,St,Rb	No	No	NTC	
Ka	Seaskinnish	Seaskinnish		H			Sk,Co,Pk,Cm,Ch,St,Rb	Yes	Yes	NTC	
Ka	Seekwyakin	Seekwyakin		M			Co,Pk,Cm,Ch,St	No	No	West Fraser	
Ka	Shames	Shames		H			Co,Pk,Cm,Ch	Yes	No	KBC	
Ka	Skeena River Kalum	Skeena River Kalum		VH	SR CO		SrSt,Sk,Pk,Ch,Cm,Co,Eu	Yes	No	KBC	
Ka	Slowmaldo	Slowmaldo		H		DV	St,Sk,Co,Ch,Rb	No	No	NTC	
Ka	Snowbank	Snowbank		H			Co,Ch,Dv,Mw,Rb	No	No	NTC	
Ka	Stewart	Stewart	H	H				No	No		
Ka	Taft	Taft		M		DV	Ch	No	No	NTC	

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
Ka	Taylor	Taylor		H			Sk,Co,Ch,St,Rb,Mw	No	No	NTC	
Ka	Tchitin	Tchitin		VH		BT	Co,Ch,St,Rb	Yes	Yes	NTC	
Ka	Tenaiko	Tenaiko		M			Co,Ch	No	No	West Fraser	
Ka	Tezwa River	Tezwa River		M			Sk,Co,Ch	No	No	West Fraser	
Ka	Tintina	Tintina		VH		BT	Sk,Co,St	Yes	Yes	NTC	
Ka	Tony	Tony		H		BT	Sk,Co,Ch,Cm,Pk,St,Rb	No	No	NTC	
Ka	Treasure	Treasure	L	VH	SRST	BT	Co,Rb	No	No	SCI	
Ka	Treaty	Treaty		H		DV	Co,Ch,Mw,Rb	No	No	NTC	
Ka	Tsaytis	Tsaytis		M			Co,Pk,Cm,Ch	No	No	West Fraser	
Ka	Tseax Lower	Tseax Lower		H			Sk,Co,Pk,Cm,Ch,St,Rb	Yes	Yes	NTC	
Ka	Tseax Upper	Tseax Upper		H			Sk,Co,Ko,Mw,Rb,St	Yes	Yes	NTC	
Ka	Vile	Vile		M			Co	No	No	NTC	KKBC
Ka	Wathl	Wathl		H		BT,CT	Co,Pk,Cm	No	No	West Fraser	Haisla
Ka	Wedeene	Wedeene		VH			Ch,Co,St,Pk,Cm,Rb	Yes	Yes	West Fraser	
Ka	Weewanie	Weewanie		H		CT	Co,Pk,Cm,St	Yes	No	West Fraser	KKBC
Ka	Whidbey East	Whidbey East		M				No	No	West Fraser	KKBC
Ka	White	White		M		BT	Co,St,Rb,Mw	No	No	NTC	
Ka	Wildfire	Wildfire		H		DV	Rb,Mw	No	No	NTC	
Ka	Williams	Williams		H		CT	Sk,Co	Yes	Yes	KBC	
Ka	Willoughby	Willoughby		M		BT	Co,St,Rb,Mw	No	No	NTC	KKBC
Ka	Zymacord	Zymacord		VH		CT	Co,Pk,Cm,Ch,St,Rb	Yes	Yes	KBC	

3.4.6 North Coast Forest District

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
NC	Aaltanhash	Aaltanhash	N/A	M			CO PK CM	No	No		
NC	Anyox	Anyox	N/A	L			Nothing reported in FISS	No	No		Haisla
NC	Banks	Banks	N/A	M		CT	SK CO PK CM	No	No		
NC	Belle Bay	Belle Bay	N/A	H			CO PK CM CH DV	No	No		Haisla
NC	Big Falls	Big Falls	N/A	H		CT	CO PK CM DV CH DV	No	No		Haisla
NC	Bishop	Bishop	N/A	H			CO PK CM KO	No	No		Haisla
NC	Brown	Brown	N/A	H		ST CT	SK CO PK CM CH DV MW RB	No	No		
NC	Butedale	Butedale	N/A	H		ST	SK CO PK CM DV RT	No	No		
NC	Campania	Campania	N/A	M			CO PK CM	No	No		
NC	Captain	Captain	N/A	H		CT	SK CO PK CM DV	No	No		
NC	Chambers	Chambers	N/A	H		ST CT	CO PK CM CH DV RB	No	No		
NC	Chappel	Chappel	N/A	M			CO PK CM	No	No		
NC	Crab	Crab	N/A	M			CO PK CM	No	No		
NC	Dundas	Dundas	N/A	M			CO PK CM	No	No		
NC	Gil	Gil	N/A	M			CO PK CM	No	No		
NC	Green	Green	N/A	M			CO PK CM	No	No		
NC	Gribble	Gribble	N/A	M			CO PK CM	No	No		
NC	Hartley	Hartley	N/A	H		CT	SK CO PK CM DV	No	No		
NC	Hawkes	Hawkes	N/A	M			CO PK CM	No	No		
NC	Helmeken	Helmeken	N/A	M			SK CO PK CM	No	No		
NC	Hevenor	Hevenor	N/A	M				No	No		
NC	Iknouk	Iknouk	N/A	H			CO PK CM CH DV RB	No	No		
NC	Johnston	Johnston	N/A	VH		ST CT	SK CO PK CM CH DV MW RB	No	No		
NC	Kaien	Kaien	H	VH		ST CT	SK CO PK CH CN DV RB	Yes	No		
NC	Khtada	Khtada	N/A	VH		ST CT	DV RB KO CO PK	No	No		
NC	Khutze	Khutze	N/A	H			CO PK CM CH	No	No		
NC	Khutzeymateen	Khutzeymateen	N/A	H		ST CT	CO PK CM CH DV RB	No	No		
NC	Khyex	Khyex	N/A	H		ST CT	CO PK CM CH DV RB	No	No		
NC	Kiltuish	Kiltuish	N/A	H			CO PK CM CH	No	No		
NC	Kitkiata	Kitkiata	N/A	H		ST	CO PK CM CH	Yes	No		
NC	Kitsault	Kitsault	M	H			CO PK CM CH DV	No	No		
NC	Klekane	Klekane	N/A	M			CO PK CM	No	No		

MoF District	Watershed Unit	Subunit	Regional priority for domestic water supply	Regional priority for fish	Existing Fish Species and populations at Risk			Priority Key watershed for region (Y/N)	Targeted	MYA # (for Ws units with active projects)	Implementing Partners
					Pop. HRE	Prov. Signif.	Reg. Significance				
NC	Kswhan	Kswhan	N/A	M			CO PK CM DV	No	No		
NC	Kumealon	Kumealon	N/A	H		CT	SK CO PK CM DV	Yes	Yes		
NC	Kwinamass	Kwinamass	N/A	H		CT DV	ST CO	Yes	No		
NC	Laredo	Laredo	N/A	M			SK CO PK CM	No	No		
NC	Marmot	Marmot	N/A	M		ST	CO DV RB	No	No		
NC	McCauley	McCauley	N/A	M			SK CO PK CM	No	No		
NC	Monkton	Monkton	N/A	M			SK CO PK CM	No	No		
NC	Nass	Nass	L	M				No	No		
NC	Observatory East	Observatory East	N/A	M			CO PK	No	No		
NC	Observatory West	Observatory West	N/A	M			CO PK	No	No		
NC	Olh	Olh	N/A	M			CO PK CM	No	No		
NC	Pa-aat	Pa-aat	N/A	M		CT	CO PK CM	No	No		
NC	Pearse	Pearse	N/A	M			CO PK CM	No	No		
NC	Porcher	Porcher	N/A	H		ST	CO PK CM	Yes	No		
NC	Quottoon	Quottoon	N/A	VH		CT ST	SK CO PK CM DV	Yes	Yes	Intern. Forest Products	
NC	Red Bluff	Red Bluff	N/A	H		CT	SK CO PK CM	No	No		
NC	Scotia	Scotia	N/A	H		ST	CO PK DV RB	Yes	No		
NC	Skeena Is.	Skeena Is.	N/A	H		ST	PK CM CO	Yes	No		
NC	Somerville	Somerville	N/A	H		ST CT	CO PK DV	No	No		
NC	Sparkling	Sparkling	N/A	H		CT	CO PK CM CH	No	No		
NC	Stagoo	Stagoo	N/A	M			CO PK CM	No	No		
NC	Stevens	Stevens	N/A	L			None listed	No	No		
NC	Surf	Surf	N/A	M			CO PK CM	No	No		
NC	Tolmie	Tolmie	N/A	M			CO PK CM	No	No		
NC	Triumph	Triumph	N/A	VH		ST	PK CM	No	No		
NC	Trutch	Trutch	N/A	L			CO PK CM	No	No		
NC	Tuck	Tuck	H	H		ST	SK CO PK CM DV	Yes	Yes		
NC	Union	Union	N/A	H		ST CT	CO PK CM CH DV RB	Yes	Yes		
NC	Whalen	Whalen	N/A	H			SK CO PK CM	No	No		

3.5 Table 4. Project Status Summary for Watershed Units

3.5.1 Lakes Forest District

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Target-ed	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
La	Bulkley	Broman	Yes	Yes														
La	Bulkley	Crow-Foxy	Yes	Yes														
La	Bulkley	Day Lake	Yes	Yes														
La	Bulkley	Maxan	Yes	Yes														
La	Bulkley	Upper Foxy	Yes	Yes														
La	Burns Lake East	Burns	Yes	Yes														
La	Burns Lake East	Cheskwa	Yes	Yes														
La	Burns Lake East	Shovel	Yes	Yes														
La	Burns Lake East	Tchesinkut E.	Yes	Yes														
La	Burns Lake East	Tercer	Yes	Yes														
La	Burns Lake West	Decker Steams	Yes	Yes														
La	Burns Lake West	Eagle Ck.	Yes	Yes														
La	Burns Lake West	Gerow	Yes	Yes														
La	Burns Lake West	Palling	Yes	Yes														
La	Burns Lake West	Tchesinkut W.	Yes	Yes														
La	Cheslatta	Ootsanee	Yes	Yes														
La	Fleming	Fleming Ck.	Yes	Yes														
La	Fleming	Lower Tildesly	Yes	Yes														
La	Fleming	Upper Tildesly	Yes	Yes														
La	Intata	Henson	Yes	Yes														
La	Intata	Natalkuz	Yes	Yes														
La	Intata	Ootsa-Intata	Yes	Yes														
La	Taltapin	Augier/Pinkut	Yes	Yes														
La	Taltapin	Donald Ldg	Yes	Yes														
La	Taltapin	Helene	Yes	Yes														
La	Taltapin	Henrietta	Yes	Yes														
La	Taltapin	Taltapin	Yes	Yes														
La	Babine East	Four Mile	Yes	No														
La	Babine East	Gullwing	Yes	No														
La	Babine East	Sutherland	Yes	No														
La	Babine West	Froggy-South	Yes	No														
La	Babine West	Pendleton	Yes	No														

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Target-ed	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
La	Babine West	Pierre	Yes	No														
La	Babine West	Twain	Yes	No														
La	Babine West	Upper Pinkut	Yes	No														
La	Chelaslie	White Eye	Yes	No														
La	Cheslatta	Cheslatta	Yes	No														
La	Cheslatta	Knapp	Yes	No														
La	Francois East	Binta	Yes	No														
La	Francois East	Haney	Yes	No														
La	Francois East	Red Hills	Yes	No														
La	Francois East	Takysie	Yes	No														
La	Francois East	Uncha	Yes	No														
La	Francois West	Allin Ck.	Yes	No														
La	Francois West	Evans	Yes	No														
La	Francois West	Henkel	Yes	No														
La	Francois West	Katherine Lk.	Yes	No														
La	Francois West	Ramsey	Yes	No														
La	Francois West	Tatalrose	Yes	No														
La	Ootsa	Ootsa	Yes	No														

3.5.2 Morice Forest District

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Target-ed	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Mo	Buck	Aitken Creek	Yes	Yes														
Mo	Buck	Buck Creek	Yes	Yes														
Mo	Buck	Dungate Creek	Yes	Yes														
Mo	Houston-Tommy	Morice River	Yes	Yes														
Mo	Houston-Tommy	Houston-Tommy Creek	Yes	Yes														
Mo	Kidprice	Lamprey	Yes	Yes														
Mo	Kidprice	Nado/Cedric	Yes	Yes														
Mo	Kidprice	Nanika River	Yes	Yes														
Mo	Morrison	Babine Lake - Morrison	Yes	Yes														
Mo	Morrison	Morrison Lake	Yes	Yes														
Mo	Nadina	Nadina River	Yes	Yes														
Mo	Owen	Fenton Creek	Yes	Yes														
Mo	Owen	Owen Creek	Yes	Yes														
Mo	Owen	Peacock Creek\Morice	Yes	Yes														
Mo	Fulton	Fulton River	Yes	No														
Mo	Fulton	Guess Creek	Yes	No														
Mo	Fulton	Tanglechain Creek	Yes	No														
Mo	Kidprice	Kidprice Lake	Yes	No														
Mo	Nadina	Nadina Lake	Yes	No														
Mo	Nadina	Tagetochlain Lake	Yes	No														
Mo	Nanika	Nanika Lake	Yes	No														
Mo	North Babine	Babine Lake - N. Babine	Yes	No														
Mo	North Babine	Big Loon Creek	Yes	No														
Mo	Valley	Barren Creek	Yes	No														
Mo	Valley	Bulkley River	Yes	No														
Mo	Valley	Byman Creek	Yes	No														
Mo	Valley	Emerson Creek	Yes	No														
Mo	Valley	McQuarrie Creek	Yes	No														
Mo	Valley	Richfield Creek	Yes	No														

3.5.3 Bulkley-Cassiar Forest District

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Targeted	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Bu	Babine	Babine	Yes	Yes	O	O	O	C		P	P	P	P	P	P	P	P	P
Bu	Babine	Nilkitkwa Lake	Yes	Yes	C	C	C	C		P	P	P	P	P	O	P	P	P
Bu	Telkwa	Cumming	Yes	Yes	C	C	C			C	C	C	C	C	C	C	C	C
Bu	Telkwa	Goathorn	Yes	Yes	C	C	C			C	C	C	C	C	C	C	C	C
Bu	Telkwa	Jonas	Yes	Yes	C	C	C			C	C	C	C	C	C	C	C	C
Bu	Telkwa	Lower Telkwa	Yes	Yes	C	C	C	C		C	C	C	C	C	P	C	C	O
Bu	Torkelson	Tsezakwa	Yes	Yes	C	C	C	C		P	P	P	P	P	P	P	P	P
Bu	Torkelson	West Babine	Yes	Yes	C	C	C		C	P	P	P	P	P	P	P	P	P
Bu	Trout Creek	Toboggan	Yes	Yes	C	?	C			C	C	C	C	?	C	?	?	P
Bu	Trout Creek	Trout	Yes	Yes	C	C	C			C	C	C	C	?	P	?	?	P
Bu	Babine	Boucher	Yes	No														
Bu	Babine	E. Nichyeskwa	Yes	No														
Bu	Babine	Nilkitkwa R.	Yes	No														
Bu	Blunt	Blunt	Yes	No														
Bu	Bulkley	Bulkley Valley	Yes	No														
Bu	Copper	Caribou	Yes	No														
Bu	Copper	Copper	Yes	No														
Bu	Copper	Hankin	Yes	No														
Bu	Copper	Silvern	Yes	No														
Bu	Corya	Boulder	Yes	No														
Bu	Corya	Corya	Yes	No														
Bu	Corya	John Brown	Yes	No														
Bu	Deep Creek	Deep Creek	Yes	No														
Bu	Harold Price	Lower H. P.	Yes	No														
Bu	Harold Price	Touhy	Yes	No														
Bu	Kitseguecla	Kitseguecla	Yes	No														
Bu	Reiseter	Canyon	Yes	No														
Bu	Reiseter	Causqua	Yes	No	C	UK	UK			C	UK	UK	C	UK	UK	UK	UK	UK
Bu	Reiseter	Reiseter	Yes	No														
Bu	Telkwa	Arnett	Yes	No	C	C	C			C	C	C	C	C	C	C	C	C
Bu	Telkwa	Bridge	Yes	No														
Bu	Telkwa	Elliot	Yes	No														
Bu	Telkwa	Howson	Yes	No														
Bu	Telkwa	Pine	Yes	No	C	C	C			C	C	C	C	C	C	C	C	C

3.5.4 Kispiox Forest District

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Targeted	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Ki	Cranberry River	Cranberry River	Yes	Yes														
Ki	Kispiox	Kispiox	Yes	Yes														
Ki	Kitseguecla	Kitseguecla	Yes	Yes														
Ki	Kitwanga	Kitwanga	Yes	Yes														
Ki	Natlin	Natlin	Yes	Yes														
Ki	Suskwa	Suskwa	Yes	Yes														
Ki	Upper Kispiox	Upper Kispiox	Yes	Yes														
Ki	Babine Bulkley	W Nichyeskwa	Yes	No														
Ki	Kitwancool	Kitwancool	Yes	No														
Ki	Moonlit	Moonlit	Yes	No														
Ki	Shegunia	Shegunia	Yes	No														
Ki	Sweetin	Sweetin	Yes	No														
Ki	Tenas	Tenas	Yes	No														
Ki	Upper Cranberry	Upper Cranberry	Yes	No														

3.5.5 Kalum Forest District

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Targeted	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Ka	Ansedegan	Ansedegan	Yes	Yes														
Ka	Cecil	Cecil	Yes	Yes	C	C	C	Yes	10/01	C	O	O	C	P	P	C	P	P
Ka	Cedar	Cedar	Yes	Yes	C	O	C	Yes	?	P	P	P	P	P	P	P	P	P
Ka	Clear	Clear	Yes	Yes	C	C	C	N/A	04/01	O	O	O	O	P	O	O	P	O
Ka	Clore	Clore	Yes	Yes														
Ka	Copper Lower	Copper Lower	Yes	Yes														
Ka	Exstew	Exstew	Yes	Yes	P	O	C	Yes	?	P	P	P	P	P	P	P	P	P
Ka	Ginlulak	Ginlulak	Yes	Yes														
Ka	Greenville	Greenville	Yes	Yes														
Ka	Hardscrabble	Hardscrabble	Yes	Yes	O	P	P	No	?	P	P	P	P	P	P	P	P	P
Ka	Hirsch	Hirsch	Yes	Yes	C	O	C	Yes	10/01	C	P	O	O	P	P	O	P	P
Ka	Humphrys	Humphrys	Yes	Yes	C	O	C	Yes	10/01	C	O	O	C	P	P	C	P	P
Ka	Irving	Irving	Yes	Yes														
Ka	Ishkheenickh	Ishkheenickh	Yes	Yes														
Ka	Kalum Lower	Kalum Lower	Yes	Yes	C	O	C	Yes	?	O	O	O	O	O	O	O	O	O
Ka	Kiteen Lower	Kiteen Lower	Yes	Yes														
Ka	Kitnayakwa	Kitnayakwa	Yes	Yes														
Ka	Ksedin	Ksedin	Yes	Yes														
Ka	Kwinatahl	Kwinatahl	Yes	Yes														
Ka	Lakelse River	Lakelse River	Yes	Yes	C	O	C	Yes	?	O	O	O	O	P	O	P	P	O
Ka	Little Wedeene	Little Wedeene	Yes	Yes	C	O	C	Yes	10/01	C	P	O	C	P	P	C	P	P
Ka	Meziadin Lake	Meziadin Lake	Yes	Yes														
Ka	Nelson	Nelson	Yes	Yes	C	C	C	Yes	12/01	O	O	O	O	O	O	O	O	O
Ka	Oweegee	Oweegee	Yes	Yes														
Ka	Seaskinnish	Seaskinnish	Yes	Yes														
Ka	Tchitin	Tchitin	Yes	Yes														
Ka	Tintina	Tintina	Yes	Yes														
Ka	Tseax Lower	Tseax Lower	Yes	Yes														
Ka	Tseax Upper	Tseax Upper	Yes	Yes														
Ka	Wedeene	Wedeene	Yes	Yes	C	O	C	Yes	10/01	C	O	O	C	P	O	O	P	P
Ka	Williams	Williams	Yes	Yes	C	O	C	Yes	10/02	O	O	O	O	P	P	P	P	P
Ka	Zymacord	Zymacord	Yes	Yes	C	O	C	Yes	?	O	P	O	P	P	P	P	P	P
Ka	Brown Bear	Brown Bear	Yes	No														
Ka	Chimdemash	Chimdemash	Yes	No														
Ka	Chist	Chist	Yes	No														

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Targeted	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
Ka	Dala	Dala	Yes	No														
Ka	Dasque	Dasque	Yes	No														
Ka	Davies	Davies	Yes	No														
Ka	Hot Springs	Hot Springs	Yes	No														
Ka	Hunter	Hunter	Yes	No														
Ka	Kemano River	Kemano River	Yes	No														
Ka	Kildala	Kildala	Yes	No														
Ka	Kinskuch	Kinskuch	Yes	No														
Ka	Kiteen Upper	Kiteen Upper	Yes	No														
Ka	Kleanza	Kleanza	Yes	No														
Ka	Legate	Legate	Yes	No														
Ka	Limonite	Limonite	Yes	No														
Ka	McKay	McKay	Yes	No														
Ka	Nass River Kalum	Nass River Kalum	Yes	No														
Ka	Shames	Shames	Yes	No														
Ka	Skeena R. Kalum	Skeena River Kalum	Yes	No														
Ka	Weewanie	Weewanie	Yes	No														

3.5.6 North Coast Forest District

P=Planned (Scheduled/not underway). O= Ongoing (commenced/not complete). C= Complete (no further work scheduled). NR= Not required (restorative work not required for this component)

MOF District	Watershed Unit	Subunit	Priority Key	Targeted	Overview Assessment			Restoration Plans		Prescriptions			Major Works			Routine Effectiveness Evaluation		
					Upslope	Riparian	In-Stream	In-terim	Full	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream	Upslope	Riparian	In-Stream
NC	Kumealon	Kumealon	Yes	Yes	C	C	C	C	C	C	C	C	NR	P	C	NR	P	C
NC	Quottoon	Quottoon	Yes	Yes	C	C	C	C	C	NR	P	P	NR	P	P	NR	P	P
NC	Tuck	Tuck	Yes	Yes	C	C	C	C	C	C	P	C	NR	P	C	NR	P	P
NC	Union	Union	Yes	Yes	C	C	C	C	C	P	P	NR	P	P	NR	P	P	NR
NC	Kaien	Kaien	Yes	No	P													
NC	Kitkiata	Kitkiata	Yes	No	C	C	C			C			C			P		
NC	Kwinamass	Kwinamass	Yes	No	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
NC	Porcher	Porcher	Yes	No	C					C			C			P		
NC	Scotia	Scotia	Yes	No	C	C	C			C			C			P		
NC	Skeena Is.	Skeena Is.	Yes	No														

3.6 Priority Needs for Effectiveness Evaluations

Implementation of an Effectiveness Evaluation plan for restoration activities in the Skeena Bulkley Region is a priority activity for:

1. any Regional LUs that have significant restorative activities completed in them since the programs inception;
2. LUs that have technically experimental activities already implemented;
3. all Targeted LUs identified in this 2002-2006 RMP.

Due to the watershed based Restoration Plan (RP) "Phase 3" exercise that is planned to be completed by the fall of 2001, project based routine effectiveness evaluation (REE) priorities will not be outlined in this RMP. Detailed plans for REE will be developed and outlined for each Targeted LU in the RP's. Operational and Intensive Effectiveness Evaluation (OEE and IEE) priorities will be identified within the Skeena Bulkley Region as an addendum to this RMP when a process for implementation of these activities is developed by the Watershed Restoration Program's Technical Review and Evaluation Working Group (TREWG).

3.7 EEV APPENDICES

A. MANAGEMENT UNIT RMP CONTACT AND SUPPORT PERSONNEL

North Coast Management Unit Contact and Support Personnel list, Lance Loggin and Damian Keating, West Fraser Mills Ltd, Skeena Sawmills-(250)635-6336, Owen Fewer International Forest Products (250)615 6766, Kelly Sawchuk North Coast MoF-(250)624-7460, Ken Hall Western Forest Products-FRBC Co-odinator (250)286-4120 Jeff Lough MWLAP (250)847-7337.

Kalum Management Unit Contact and Support Personnel list: Ralph Ottens, MoF; Lance Loggin, Damian Keating , West Fraser Mills Ltd., Skeena Sawmills-250-635-6336; Lyle Bolton, Kitsumkalum Band Council; Ralph Robinson, Nisga'a Lisims Government; Kim Haworth, Skeena Cellulose; Kitimaat Village Band Council, Whitney Lukuku; Howard DeBeck, MoF; Chris Broster, Jeff Lough MWLAP

Kispiox Management Unit Contact and Support Personnel list: Alan Harrison MoF; Jeff Lough, MWLAP, (250)847-7337.

Bulkley Management Unit Contact and Support Personnel list: Grant Marleau, Glen Buhr MoF; Jay Baker, SCI; Mike Bandstra SCI; Tom Pendray, Fisheries and Oceans Canada (FOC); Jeff Lough, MWLAP, (250)847-7337.

Morice Management Unit Contact and Support Personnel list: John Thibeau Morice District MoF, John Brockley, Canadian Forest Products, Deidre Quinlan Houston Forest Products; Jeff Lough, MWALP, (250)847-7337.

Lakes Management Unit Contact and Support Personnel list: Keith Van Tine, MoF; Denys Bell, Deidre Quinlan, Weldwood Forest Products; Greg Vandolah West Fraser Sawmills; Jeff Lough, MWALP, (250)847-7337.

B. REFERENCES SUPPORTING EEV COMPONENT RANKING

Anonymous. 1998. *Living Blueprint for BC Salmonid Habitat*. Pacific Salmon Foundation. Published by an Independent Panel.

Cannings, SG and J. Ptolmey. 1998. *Rare Freshwater Fish of British Columbia*. Ministry of Environment, Lands and Parks, Victoria, B.C.

Haas, G.R. 1998. *Indigenous fish species potentially at risk in BC with recommendations and prioritization's for conservation forestry/resource use, inventory and research*, Fisheries Management report No. 105, Ministry of Fisheries, Vancouver, B.C.

3.0 STRENGTHENING SUSTAINABLE FOREST MANAGEMENT (SSFM)

3.1 Introduction and Planning Context

Sustainable Forest Management is a core mandate of both MoF and MELP. FRBC has also incorporated SSFM as one of its strategic objectives. RMPs serve to identify the highest priority information and knowledge gaps that are limiting the understanding and practice of sustainable forest management in each Region of the Province.

The SSFM component of the RMP consists of goals, objectives and strategies, as well as prioritized investment opportunities. In order to focus the planning process, a vision for SSFM must be clear.

Vision

Consistent with the Canadian Council of Forest Ministers' (CCFM) definition of sustainable forest management[1],. the RMP recommends the opportunities for investment that support existing or proposed forest resource planning initiatives. Investment is targeted in those projects that mitigate risks to resources, people, and communities as determined at the local and regional levels.

Goal

The goal of SSFM is to develop knowledge strategies which will address the highest priority issues limiting the implementation of sustainable forest management in the Prince Rupert/Skeena regions over the next three to five years.

District and regional staff considered the following aspects of sustainable forest management to identify priorities and issues:

- CCFM Criteria to achieve sustainable forest management goals:

1. Conservation of biological diversity
2. Maintenance and enhancement of forest ecosystem condition and productivity
3. Conservation of soil and water resources
4. Forest ecosystems contributions to global carbon cycles
5. Multiple benefits to society
6. Accepting society's responsibility for sustainable development.

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[1] "Management to maintain and enhance the long-term health of forest ecosystems, while providing ecological, economic, social and cultural opportunities for the benefit of present and future generations."

- Key issues affecting each district:

1. Certification (Performance-based management systems)
2. Strategic Land Use Plans (LRMPs, LUPs)
3. Innovative Forest Practices Agreements (IFPAs)
4. Timber Supply Reviews (TSR)
5. First Nations Treaty Negotiations
6. First Nations Forestry Strategy (FNFS)
7. Forest Practices Code implementation (e.g. Identified Wildlife Management Strategy; biodiversity guidebook; ungulate winter ranges)

The goals associated with CCFM directed the process. Strategies and action plans were developed to address the priority issues by adopting the following approach:

- Identify knowledge gaps, decision-making tools, and monitoring and evaluate opportunities that must be filled to address the issues.
- Evaluate the existing knowledge, technical tools, primarily decision-making or explanatory models, for application.
- Recommend the optimum cost effective solution for each gap. This may include:

1. Information dissemination (extension, training, access/exchange)
2. Information collection (new inventories)
3. Knowledge development (pure and/or applied research)
4. Decision making tool development (models, processes)
5. Monitoring or model validation processes (that will inform us whether the issue has or is being addressed).

Overview of Planning Approach

Following the process outlined in the FRBC RMP Guidelines, PRFR and the Skeena Environment Region identified members who could participate in the process. Key people in planning from government and industry were invited to provide input into the SSFM section of the regional RMP.

In May, tasks were divided, as per the Guidelines, between teams of people. The Regional Strategic Team (RST) was identified to provide guidance and direction on key regional issues. The RST includes: the Regional Manager of MoF, the Regional Director of MELP, the LUCO coordinator, the Regional Director of FRBC and two industry representatives. The Regional Planning Team (RPT), which includes representatives from MELP, MoF, FRBC and industry, coordinated the process within the Region, providing direction to the District Planning Teams (DPTs) in each of the respective Forest Districts in the Region. The DPTs consist of representatives from MELP, MoF, FRBC, industry, First Nations and others who have valuable technical input in SFM.

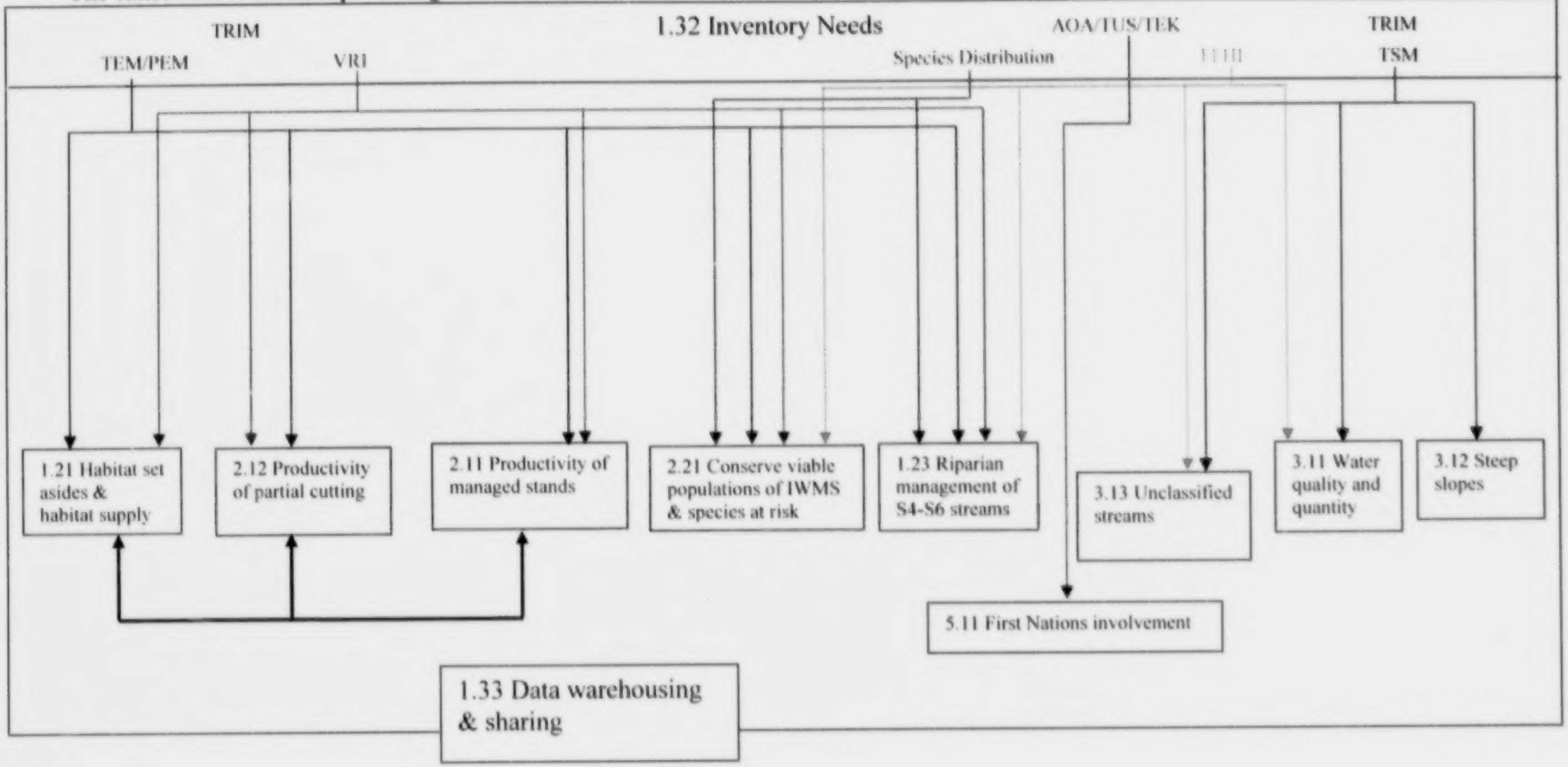
Issues

Forty issues that related to the SFM goals were identified at regional and district levels. With input from each Forest District, the RPT analyzed these issues, targeted 11 high priority issues for SFM goals which are relevant to the Prince Rupert Forest Region and synthesized the functional relationships among issues. The RST confirmed the regional priority issues. They are as follows:

SFM Goals (from Canadian Council of FMs)	High Priority Regional Issues
Conserve biological diversity	1.21 How do we ensure the LUs retain appropriate attributes represented in riparian, OGMAs, FENs, sensitive areas?
	1.23 How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat?
	1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?
	1.33 How can we access exiting information and technology transfer to share information resources as broadly as possible at reasonable cost?
Maintain & enhance ecosystem condition & productivity	2.11 What is the productivity of managed stands in the different ecosystems of the PRFR?
	2.12 How productive are managed stands using partial cutting silvicultural systems in the different ecosystems of the PRFR?
	2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?
Conserve soil and water resources	3.11 How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity?
	3.12 What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base?
	3.13 What are the best management practices around unclassified streams based on existing stream inventory information?
Ensure multiple benefits to society	5.11 How do we increase the participation of First Nations in the local forest sector economy?

Many of the issues are interrelated or can be addressed to some extent by similar activities. Often these activities are inventories. The following chart indicates associations and relationships between the high priority issues.

The functional relationships among issues are as follows:


1.32 Inventory Needs
TRIM
TEM/PEM
VRI
Species Distribution
AOA/TUS/TEK
TRIM
TSM
1.21 Habitat set asides & habitat supply
2.12 Productivity of partial cutting
2.11 Productivity of managed stands
2.21 Conserve viable populations of IWMS & species at risk
1.23 Riparian management of S4-S6 streams
3.13 Unclassified streams
3.11 Water quality and quantity
3.12 Steep slopes
5.11 First Nations involvement
1.33 Data warehousing & sharing

Knowledge Strategies

A knowledge strategy as defined by the 2002/03 SSFM Guidelines is *the collection of activities that when implemented together will build the knowledge required to address the SFM issue at the strategic planning and decision making level.*

The RPT identified the knowledge strategies for regional priority issues so that gaps were identified and will be completed in a logical sequence.

Activities

Representatives from the RPT worked with each DPT to enable local understanding of the strategic approach within each knowledge strategy. Working within this approach, each DPT strove to:

- recommend activities that are eligible for Forest Renewal funding and which correspond to current budget levels (within 130-150%),
- recommend activities which integrate with regional knowledge strategies at the management unit level,
- recommend activities which are prioritized within the regional knowledge strategies,
- recommend activities which are attainable over a 3-5 year planning horizon,
- provide rationale for any off-strategy investment recommendation.

SSFM-type initiatives have existed for many years. By espousing a strategy which identifies and invests in knowledge gaps and decision-making tools that currently limit development or progress, those initiatives are advanced.

3.1.1 Summary of Strategic Land Use Planning in the Region

The following information was made available by the Land Use Coordination Office (www.luco.gov.bc.ca/lrmp/lrmpstat.htm)

3.1.1.1 Bulkley LRMP

The Bulkley LRMP was approved in March 1998 and is being implemented. A Monitoring Committee was established in the spring of 1999, and met on November 1st, 2000 to discuss the first draft annual monitoring report. It is expected that in response to its review of the monitoring report, the Monitoring Committee will provide recommendations on plan implementation to the Prince Rupert Inter-agency Management Committee by the end of the year.

3.1.1.2 Cassiar Iskut-Stikine LRMP

On October 11, 2000, government announced approval of the Cassiar Iskut-Stikine LRMP. The plan confirms 14 new protected areas, 15 geographic resource management zones and that the remaining land base will be under general management. A draft higher level plan for the Cassiar Iskut-Stikine will soon be released for public review.

3.1.1.3 Kalum

On April 10, 2001, government announced approval of the Kalum LRMP. The decisions include 20 new protected areas comprising about 67,000 hectares. Existing and new protected areas for the 2.1-million-hectare plan area cover about 463,000 hectares or 22 per cent of the area. Special management zones have been designated for 24 per cent of the planning area to maintain backcountry recreation, coastal and scenic areas, fish and wildlife – particularly grizzly bear, tailed frogs and salmon – as well as cultural heritage and community watersheds. Key recommendations for general management areas include strategies to encourage economic development and maintain forest biodiversity to halt the decline of significant grizzly bear populations and protect mountain goats.

3.1.1.4 Kispiox

The Kispiox LRMP Monitoring Committee was established in April 2000 and met in November to develop Terms of Reference. It is anticipated that the first annual monitoring report will be released in early 2001.

3.1.1.5 Lakes

The final Lakes LRMP was released in May 2000. The plan is an update and consolidation of the various decisions and reports that government endorsed in August 1999. A Monitoring Committee has been established.

3.1.1.6 Queen Charlotte Islands

A process has not yet been initiated. A technical background land use report for the plan area was prepared and released in the spring of 2000. Discussions continue between the Land Use Coordination Office, the Haida Nation and island communities to identify a suitable model for land use planning on the Queen Charlotte Islands.

3.1.1.7 North Coast

A Process Coordinator was hired to initiate and coordinate the development of an LRMP for the North Coast TSA. Government is undertaking preparatory work, and is targeting initiation of an LRMP process in late spring of 2001.

3.1.1.8 Morice

Licensees and government have initiated an Innovative Forest Practices Agreement (IFPA) for the Morice TSA. Using the MacGregor Model Forest analysis model, best management strategies are being tested and implemented to enhance forest management opportunities in the area.

The Morice is a priority area for an LRMP, and government will initiate a planning process when other processes are completed and resources become available

3.1.1.9 Kalum North (Nass)

A planning process will be initiated when other processes are completed and resources become available.

3.1.1.10 Dease-Liard

A planning process will be initiated when other processes are completed and resources become available.

3.1.1.11 Atlin-Taku

The Atlin-Taku area is considered the next priority area to initiate an LRMP planning process.

3.1.1.12 Landscape Unit Plans

The Bulkley district staff has completed draft Landscape Unit Plans for the planning area of the Bulkley LRMP. The district manager has approved the biodiversity objectives for the areas defined in the LUPs; however, other objectives are draft and used to guide forest management practices in the Bulkley TSA.

The Regional Manager for implementation in PRFR has approved the Regional Land Unit Planning Strategy. The Strategy establishes biodiversity emphasis options and identifies a proposed timetable for biodiversity planning in the Region. Districts are at various stages of analysis and preparatory work to establish landscape objectives.

3.1.1.13 Timber Supply Review

Forest District	Management Unit	TSR 2 Status	TSR 2 Completion Date
Lakes	Lakes TSA	in-progress	July, 2001
Morice	Morice TSA	in-progress	December, 2001
Bulkley-Cassiar	Bulkley TSA	in-progress	July, 2001
	Cassiar TSA	in-progress	October, 2001
Kispiox	Cranberry TSA	complete	May, 1998
	Kispiox TSA	in-progress	December, 2001
Kalum	Kalum TSA	complete	November, 1999
	Nass TSA	in-progress	October, 2001
	TFL 1	complete	March, 1999
	TFL 41	complete	December, 1999
North Coast	North Coast TSA	complete	October, 2000
	TFL 25	in-progress	December, 2001

3.2 *Integrated Plans for Strengthening Sustainable Forest Management*

Each district has identified the highest priority issues that need to be addressed within the district. In the following sections, these issues are defined in terms that are relevant to the district. Projects whose purpose is to address these issues are listed.

4.2.1 Lakes Forest District

The Lakes Forest District highest priority issues include:

- 1.23 How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat?,
- 1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?,
- 2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?, and
- 5.11 How do we increase the participation of First Nations in the local forest sector economy?.

How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat? (Issue 1.23)
Uncertainties around crossing S4 and S6 streams have a major impact on planning and operations. Completion of the Fish Stream Habitat Inventory for the Lakes District in the 2002 field season will provide planners with information to make cost effective decisions regarding stream crossings, as well as block and road layout.

This total inventory of all stream classifications in the district should be collected in MELP format for inclusion in the FISS database.

Completion of The Fish Stream Habitat Inventory will provide a sound database for the management of our streams.

For what forest resources are we lacking a complete and integral inventory to meet TSR requirements? (Issue 1.32)
Retaining appropriate attributes in OGMAs, FENs and riparian areas are important to the LRMP implementation strategy, TSR3 and Landscape Unit Planning initiatives. As we begin to manage for biodiversity, old growth (OGMAs) riparian areas, and other values, we need to collect additional attributes. VRI is a standardized provincial data base capable of carrying many of these additional attributes.

Biodiversity will be more effectively managed through the collection of VRI attributes including shrubs and herb plant lists for species diversity, district totals of coarse woody debris, soil moisture and nutrient regimes, stumps, basal area, number of stems/ha and potential wildlife trees.

This move to VRI comes at an ideal time as we can also capture our Mountain Pine Beetle (MPB) epidemic. Approximately 200 000 ha of dead trees must be re-inventoried to update the files and to prepare for Timber Supply Review III. VRI also provides basal area, an important attribute for beetle hazard mapping.

The two initiatives that most completely address these knowledge gaps are VRI and PEM/TEM.

How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base? (Issue 2.21)
Lakes has an approved LRMP. It is important to monitor the LRMP as required in the LRMP (Chapters 3.1 General Resource Management objectives, 3.4 Environmental Direction, 4.1 Resource Management Zones, 5.3 Environmental Resource Analysis and Chapter 6, Plan Management and Administration).

Lakes Landscape Unit Planning (LUPs) must ensure appropriate attributes in OGMAs, FENS and riparian areas. Habitat requirements for Caribou and Grizzly Bear as per section 2.4.3 and appendix A-1 of TSR II must be further refined in preparation for TSR III.

The greatest risk to land use decisions are the locations of these networks, habitats and restrictions.

Predictive Ecosystem Mapping and to a lesser extent, VRI will complete many of our existing knowledge gaps.

How do we increase the participation of First Nations in the local forest sector economy? (Issue 5.11)
Lakes Forest District realizes the importance of First Nations involvement in many aspects of our Forestry work. To facilitate an effective model for First Nation involvement in the local forest sector, Lakes Forest District began work on the Lakes Archaeological Resource Plan (LARP) in 1998. The LARP attempts to capture all attribute and spatial data relevant to our First Nations, including AOAs, AIAs, TUS, etc. This data provides a basis for meaningful First Nations input beginning at the Strategic Planning stage. In the past, knowledge gaps in our First Nation data have been operationally expensive.

To increase the participation of First Nations in our local forest sector economy, it is important to have a map of their history.

4.2.2 Morice Forest District

The SSFM group in the Morice has identified 4 High Priority Regional Issues that relate to the CCFM criterion. They include:

- 1.23 How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat?,
- 1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?,
- 2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?, and
- 3.11 How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity?

The projects that were selected as high priority relate directly to specific Regional issues.

How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat? (Issue 1.23)
Fish and Fish Habitat is a required inventory needed for the submission of operational plans under the FPC. This information will fill an information gap for operational planning needs. Once the information is easily accessible, it will be available for strategic planning purposes (i.e. management of riparian areas for water quality and quantity, downslope impacts to fish and fish habitat, timing of runoff and cold water temperature management).

For what forest resources are we lacking a complete and integral inventory to meet TSR requirements? (Issue 1.32)
The forest cover is probably the most important layer of information used during the TSR process to identify the short and long term timber supply for the Morice District. Community stability depends on a healthy environment and stable timber supply. Both the orthophoto project and the VRI project will contribute to the improvement of forest cover information by; overlaying the existing forest cover with orthophotos, you could identify areas of typing (npbrush, swamp etc) that are incorrectly typed thereby improving the quality of stand level information. VRI will provide detailed stand level information that include the existing timbered stand and site level information, providing improved Site Index estimates, site series assessments which can link with PEM which will also improve the quality of information represented in the forest cover layer.

Caribou is a species of management concern, with a number of herds existing entirely or partially in the Morice to meet their life requirements. The licensees and government agencies in a portion of the Morice have agreed to management guidelines. These guidelines have been integrated i[illegible] TSR 2. More information needs to be collected to ensure that sustainable populations of Caribou can be maintained within or in association with, other adjacent districts and that information then incorporated into TSR 3.

How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base? (Issue 2.21)
There is a need to identify and capture the gap in knowledge for IWMS species and rare and endangered species, to establish baseline data. Baseline data and mapping is key to identify and protect sustainable populations of rare and endangered as well as IWMS species. Development of management strategies to ensure the Regional Issue is met is also key to this work.

In addition, this information could be directly used in; the submission of operational plans, development of objectives and strategies for strategic planning initiatives (IFPA and LRMP), the identification of stand level attributes considered in LU planning (i.e. OGMA selection) and inclusion of operational constraints for TSR 3.

The following four projects substantially address this issue in the Morice: Mountain Goat response to forest development, Goshawk nest inventory and monitoring, validation and detailing of Grizzly Bear habitat suitability mapping and Bull Trout inventory.

How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity? (Issue 3.11)

This project is related to work done in the Nadina LRUP, which identified temperature sensitive streams important to fish, and management of fish habitat. The IWAP for the Nadina LRUP identified a 30m buffer around streams leading into identified temperature sensitive streams and has a 'yet unknown' impact to timber supply. Future work in this area will identify information key to properly managing identified temperature sensitive streams with respect to shading and removal of cover. Use of this information may also lead to identification of other temperature sensitive streams in the district and provide management strategies to mitigate any potential impacts, which may also be considered in future TSRs.

4.2.3 Bulkley-Cassiar Forest District

In the Bulkley TSA portion of the Bulkley-Cassiar district the highest priority issues are

- 1.21 How do we ensure the LUs retain appropriate attributes represented in riparian, OGMAs, FENs, sensitive areas?,
- 1.23 How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat?,
- 1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?,
- 2.11 What is the productivity of managed stands in the different ecosystems of the PRFR?,
- 2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?, and
- 3.11 How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity?

How do we ensure the LUs retain appropriate attributes represented in riparian, OGMAs, FENs, sensitive areas? (Issue 1.21)

Retaining appropriate attributes in OGMAs, FENs and riparian are important for the Bulkley TSA portion of the Bulkley/Cassiar district as part of the LRMP implementation strategy, TSR3 and Landscape Unit planning initiatives. Specifically there is uncertainty in the Bulkley TSA with respect to network locations, critical habitats for IWMS and the spatial location of the elevation restriction for timber production (operability). The greatest risk to appropriate land use decisions are the locations of these networks, habitats and restrictions.

Five activities have been identified as providing the best value in filling information gaps related to issue 1.21 over the next 3 to 5 years. While not providing all the information necessary, together they give resource managers the most critical information. The activities are PEM, Spatial Modelling, Operability Study, Caribou and Grizzly bear modelling.

How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat? (Issue 1.23)

Uncertainties around crossing S4 and S6 streams are a major impact on planning and operations in the Bulkley TSA. Riparian stream classifications impact and constrain sustainable forest uses and benefits important to society and industry. Fish Stream

Inventory provides for the identification, management and conservation of critical stream habitat and components at greatest risk..

For what forest resources are we lacking a complete and integral inventory to meet TSR requirements? (Issue 1.32)

A determination of land base contributing to current and future timber supply within Bulkley TSA is a critical part of TSR. The size and distribution of habitat and supply components of the contributing land base can have a significant impact on established and future AACs. To date, the Bulkley TSA has been constrained by the limitations of environmentally sensitive area mapping as a means of assessing slope stability issues, and by the use of timber inventories or harvest practice as a means to define the operable landbase. This information is required in the Bulkley TSA to support TSR and other spatial modelling activities to determine impacts of forest management decisions on high elevation habitat supply, rare and endangered ecosystems, site productivity, landscape connectivity and sustainable forest management.

Two activities have been identified as providing the best value in filling information gaps related to issue 1.32 over the next year. The activities are Terrain Stability Mapping and the Upper Operability Study.

What is the productivity of managed stands in the different ecosystems of the PRFR? (Issue 2.11)

Productivity of managed stands under different ecological conditions is of major concern in the Bulkley and Cassiar TSAs. Most management decisions are based on estimates of the inherent productivity of the forested landbase, including predictions with respect to future supply, growth and yield.

While there is no specific issue identified as best filling information gaps related to this issue, there are a number of inter-related activities which will provide a framework to improve our knowledge base. These activities include PEM, Spatial Modelling, and Upper Operability Study.

How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base? (Issue 2.21)

The identification and conservation of viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed) must be completed in the Bulkley. Several species of wildlife have been identified in the district LRMP as requiring special management in order to protect the species and its habitat.

The Bulkley activities which will be conducted to address issue 2.21 include Telkwa Caribou, and Babine Grizzly Monitoring, and the Bulkley R. Bull Trout Inventory.

How do we manage harvesting around and crossing streams to adequately protect and conserve water quality and quantity? (Issue 3.11)

Uncertainties around crossing S4 and S6 streams are a major impact on planning and operations in the Bulkley TSA. Managers in the Bulkley TSA have been acquiring baseline data such as critical stream habitat but additional information is required to ensure adequate protection and conservation of water and water resources.

The activity identified as providing the best value in filling the information gap related to issue 3.11 and 3.12 over the next 3 years is the development of the Benthic Invertebrate Index.

4.2.4 Kispiox Forest District

The Kispiox Forest District has identified seven priority projects for FRBC funding for 2002/2003 (summarized in section 4.4.2.4)[2]. Each project has been linked to a district issue (Appendix D) and a regional issue (all 11 are listed in section 4.1.1).

Two regional issues have been identified as high priority for the Kispiox Forest District:

- 1.23/3.11 How can we best manage harvesting and crossing of S4-S6 streams to protect habitat and water quality and quantity?
- 2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?

How can we best manage harvesting and crossing S4 – S6 streams to protect habitat and water quality and quantity (Issue 1.23/3.11).
This issue relates to Kispiox Forest District issue Ki3 (Appendix D)

Protection of hydrologic integrity of watersheds, and maintenance of wild indigenous fish populations are higher level plan objectives in the LRMP.

Two high priority projects have been identified to meet this issue. All stakeholders support the Benthic Invertebrate Index for Biologic Integrity project.

Agreement has not been reached on the priority of the following:

- Fish and Fish Habitat Inventory (not supported by MoF or MELP. Support may be granted by MELP if bull trout studies are incorporated into the funding)

How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base? (Issue 2.21)
This regional issue relates the Kispiox Forest District issue Ki6 (Appendix D).

Higher level plan objectives from the Kispiox LRMP identify numerous wildlife species of concern. In addition, the LRMP outlines forest management practices in high value habitats. As well, the Identified Wildlife Management Strategy (IWMS) provides management direction for identified species. In order to implement the management direction, it is critical to identify the location of these habitats.

Five high priority projects have been identified for this issue. Species of interest are: northern goshawk (IWMS), grizzly bear (IWMS, Blue listed, LRMP), bull trout (IWMS, Blue listed, LRMP), mountain goat (IWMS, LRMP), moose (LRMP), and mule deer (LRMP).

All stakeholders support the northern goshawk adaptive management trial, and the grizzly bear habitat use in the Babine watershed project.

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[2] In August 2000, the Kispiox Forest District, in conjunction with stakeholders, created a list of high priority projects for FRBC funding. This was incorporated in its entirety in the FRBC resource management plan for 2001-2002. For the 2002-2003 fiscal, FRBC has requested to see only those projects that make up 150% of the current funding level. As a result, the remaining high priority projects are listed in Appendix C.

However, agreement has not been reached on the priority of the following projects:

- Wildlife habitat suitability model (not supported by SCI)
- Grizzly Bear Habitat Use Monitoring in the Nangeese watershed (not supported by SCI until more detailed information on the project becomes available to aid in their evaluation of the project).
- Bull Trout Studies (not supported by SCI until more detailed information on the project becomes available to aid in their evaluation of the project).

4.2.5 Kalum Forest District

In 2000-2001, the Kalum Inventory Planning Team, which includes representatives of the Ministry of Forests (District and Region), Ministry of the Environment, West Fraser Timber and Skeena Cellulose Inc. drafted and reached consensus on an integrated inventory plan.

The integrated inventory plan achieves the SSFM component of the RMP by addressing the highest priority issues involving sustainable forest management within the Kalum TSA over the next several years. This plan has been converted into the template format required for the 2002-2003 RMP

In the Kalum Forest District the highest priority issues include:

- 1.21 How do we ensure the LUs retain appropriate attributes represented in riparian, OGMAs, FENs, sensitive areas?,
- 1.23 How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat?,
- 1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?,
- 1.33 How can we access exiting information and technology transfer to share information resources as broadly as possible at reasonable cost?

How do we ensure the LUs retain appropriate attributes represented in riparian, OGMAs, FENs, sensitive areas? (Issue 1.21) and What is the productivity of managed stands in the different ecosystems of the PRFR? (Issue 1.21)
Kalum requires information on how to ensure that any Landscape Unit plans and LRMPs retain appropriate attributes for IWMS, and red and blue listed plant communities Management strategies for these species and communities can then be developed. This issue is addressed by PEM, Ungulate Winter Range, Grizzly Bear habitat, pine mushroom capability, red and blue listed plant communities studies and hardwood management strategies

How can we best manage harvesting and crossing S4-S6 streams to protect and conserve habitat? (Issue 1.23)
The issue of how to manage fish stream crossings and the risk around damaging fish habitat is critical for licensees throughout the North west. Fish habitat mapping is required for one year to complete the Kalum planning unit fish habitat inventories.

For what forest resources are we lacking a complete and integral inventory to meet TSR requirements? (Issue 1.32)

Kalum has lower quality or missing baseline inventories. These inventories affect the quality of the information used for TSR, land use planning and operational planning for all stakeholders. This issue is addressed by TRIM, PEM, VRI and all the species specific inventories in the integrated plan

How can we access exiting information and technology transfer to share information resources as broadly as possible at reasonable cost? (Issue 1.33)
Kalum has one of the longest histories of harvesting in this region. Many operational trials with valuable information have taken place over the years. The results of these trial resides in many places and formats. There is a need to catalogue, warehouse and digitally map this information. The issue of data custodianship also needs to be resolved.

Off-Strategy
There is one off strategy activity in Kalum. There are second growth forests in the Kalum that are reaching the optimum size for commercial thinning. Existing local mills cannot utilize the small logs. Without a local mill the economic potential of commercial thinning cannot be developed. There is a need to research the appropriate design for a small wood mill for the Kalum Forest District.

4.2.6 North Coast Forest District

In the North Coast Forest District the highest priority issues include:

- 1.32 For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?,
- 1.33 How can we access exiting information and technology transfer to share information resources as broadly as possible at reasonable cost?
- 2.11 What is the productivity of managed stands in the different ecosystems of the PRFR?,
- 2.21 How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?, and
- 3.12 What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base?

For what forest resources are we lacking a complete and integral inventory to meet TSR requirements? (Issue 1.32)
The Timber Harvesting Land Base (THLB) in the North Coast Forest District is constrained by many factors and only makes up approximately 6% of the total land area.

As a result, even minor changes to the THLB will have dramatic impact on the timber supply for the Timber Supply Area (TSA). Determining what forest resources are lacking a complete and integral inventory to meet Timber Supply Review (TSR) requirements has been identified as a key issue for the North Coast.

Four projects have been identified to fill this knowledge gap. These projects are scheduled over the next 3 years and will assist the Chief Forester in his determination for TSR III. These projects are Vegetation Resource Inventory (VRI), Riparian Classification Inventory (RCI), Forest Cover and HyP[3].

How can we access exiting information and technology transfer to share information resources as broadly as possible at reasonable cost? (Issue 1.33)
Government and industry are proposing ecosystem Based Management (EBM) as a method of managing the Forest-Land base. Sustainability of the forest resources and recognition of the ecological as well as the social-economic values are paramount to this management philosophy. EBM is a broad-based management technique that encompasses many disciplines.

There is one EBM project proposed in the North Coast Forest District over the next three years. This will fill in key knowledge gaps that are important to the LRMP. As this is a broad based information gathering approach it will include several of the key SSFM issues that have been identified for the North Coast. In particular, Issue 1.33: How can we access existing information and technology transfer to share information resources as broadly as possible at a reasonable cost. Through the formation of a workshop and development of a pilot project information can be developed and transferred to all stakeholders at the most reasonable cost.

What is the productivity of managed stands in the different ecosystems of the PRFR? (Issue 2.11)
Determining the productivity of managed stands in the different ecosystems of the North Coast Forest District has been identified as a key issue. The productivity of these sites relates to the TSR as well as aiding Land use decisions such as the North Coast LRMP which has recently been initiated.

Two projects are proposed for the next year to fill these knowledge Gaps. Predictive Ecosystem Mapping (PEM) will assist in identifying the ecosystems at the Site Series Level in a cost effective and reliable manner. Also SIBEC2 will identify areas where site index information is lacking and provide better information to determine the growth potential in second growth stands.

How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base? (Issue 2.21)
Forest managers are continually challenged to consider many factors when proposing industrial operations. Uncertainty about the population and habitat requirements wildlife and of rare and endangered species will hamper the ability of these managers to make responsible decisions. The NCLRMP table also requires dependable information about these species in order to set higher-level plan objectives that will conserve these species.

Three projects have been proposed in the North Coast Forest District over the next year to learn more about the habitat requirements for these species. These projects are the Marbled Murrelet Study, Herring Habitat (the affect of log dumps on herring habitat) and the Ungulate Habitat Assessment. These projects will provide valuable information regarding the habitat requirements and management direction to conserve these species.

What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base? (Issue 3.12)
Terrain stability has been identified as a key issue in the North Coast Forest District. In order to determine the best management practices for operations on steep slopes with

respect to conserving water quality and quantity, slope stability and productive land base, the terrain must first be classified.

One project has been proposed over the next year to fill this knowledge gap. SINMAP will provide a cost-effective tool for classifying terrain stability throughout the district. This will allow more accurate representation of the THLB during the TSR and will also provide valuable information for the upcoming NCLRMP.

4.3 Addressing Issues to Strengthen Sustainable Forest Management

The SSFM section of the RMP is driven by SFM goals. Regional issues address these goals. Knowledge gaps within each issue are evaluated and strategies to fill these knowledge gaps are recommended based on an integrated approach to address the issue. The activities or strategies developed in this process are therefore consistent with SFM goals and high priority regional issues.

Each of the following sections discuss how one of the 11 high priority issues will be addressed:

- the first sub-section describes the issue,
- the second sub-section recommends a knowledge strategy,
- the following sub-section describes proposed activities in the Forest Region and each Forest District for approaching each issue.

Each issue is not necessarily addressed by each management unit. Forest Districts choose to focus on a few high priority issues which are important for their area. As a result, tables proposing activities for each Forest District do not exist for all 11 issues.

Also, the activities may address many high priority issues but are only mentioned with the SSFM Issue that is most substantially addressed by the activity.

4.3.1 Issue 1.21--How do we ensure the LUs retain appropriate attributes represented in riparian, OGMAs, FENs and sensitive areas?

4.3.1.1 Description of Issue

Overview Description of the Regional Strategic Issue:
This issue centres on uncertainty as to how to retain or develop sufficient forest stand structure (attributes and composition) and wildlife habitat (carrying capacity) at a landscape scale to satisfy biodiversity conservation objectives. Biodiversity conservation depends on applying land use and management prescriptions for areas where timber harvesting in a normal economic rotation is precluded or restricted (e.g., Riparian Management Areas (RMAs), Old Growth Management Areas (OGMAs), Forest Ecosystem Networks (FENs), and Ungulate Winter Range Areas (UWRs)).

The issue is closely related to 1.22 (2001-2005 PRFR RMP), which raises the issue of timber harvesting opportunities within these same land use designations and land management prescriptions.

The crux of this issue is ecosystem management, and the application of the Biodiversity Guidebook of the Forest Practices Code, which approaches this ecosystem management within coarse filter and fine filter issues. Through the coarse filter, landscapes are expected to retain most of their biodiversity, if landscape unit planning objectives for each of six characteristics approximate the values for those characteristics that would be found in the landscape under natural disturbance regimes. The six characteristics are: seral stage distribution; temporal and spatial distribution of cut and leave areas; old seral retention and representativeness; landscape connectivity; stand structure; species composition. Application of these objectives can result in land use zonation and prescriptions in OGMAs and FENs. It is expected that the coarse filter will not suffice alone, because (a) some species have very site specific habitat needs, and (b) current management may deviate from natural disturbance in the resultant landscape values for the six characteristics. Through the fine filter, some of these problems can be addressed using specific land use prescriptions (e.g. Wildlife Habitat Areas (WHAs) under the Identified Wildlife Management Strategy (IWMS); RMA prescriptions) (See Issue 2.21).

Please review the following table for a complete discussion concerning this issue description.

Relationship to Sustainable Forest Management:
The most productive approach to the issue would be the application of Landscape Unit planning under the Biodiversity and Landscape Unit Planning Guidebooks, and this strategy is built around providing the most useful tools for this application. (The same strategy, in whole or part, could be applied to existing land use zonation and prescriptions.) Landscape Unit planning requires computer modelling software with ability to make projections of future values for the six characteristics, based on well-documented patterns of the parameter values under disturbance regimes. Four of the six (seral distribution, old seral retention, stand structure, and species composition) are ecological and best predicted, and therefore projected, on the basis of ecosystem (site series). So, the data and models should ideally be derived from an ecosystem (site series) mapping. In practice, biodiversity conservation is traded-off with timber harvesting in land use planning, so the modelling environment should have the ability to project timber volume and harvest (growth and yield; silvicultural prescription) from a site series map base.

To not undertake appropriate coarse filter ecological planning initiatives (e.g., comprehensive biodiversity characteristic objective landscape planning) may preclude future management options from environmental, timber and non-timber resource perspectives. To delay such planning initiatives may have future TSR Annual Allowable Cut impacts with possible additional declines stemming from foregone management options. Ecologically based coarse filter applications will assist with managing some non-timber resources and assist in identifying where equivalent fine filters may be required. Further, numerous LRMPs also identify objectives and related strategies of completion of comprehensive landscape units plans and, as such, delay results in strategic planning implementation issues (both the implementation of strategies in fulfilling objectives and the effectiveness of same).

The most productive approach to this issue involves the following steps that should be applied together, not necessarily in sequence:

Compile existing information presenting reasonable parameter values for each of the six characteristics, and outline additional data gathering required to establish parameter values with useful accuracy and precision.

Establish computer modelling tools that can integrate ecological parameters with timber harvesting parameters.

Establish monitoring protocols that track key parameters (e.g., aspects of the six characteristics, or other related parameters) derived from the landscape unit objectives.

Please review the following table for a complete discussion concerning this issue description, relationship with sustainable forest management, and information parameters concerning this issue.

Relationship to Strategic Resource Plans and Decisions:
A cross-reference with Issue 1.32 exists. Please see this respective issue. A coarse and fine filter ecological approach across both the landscape and stand levels as delineated within Biodiversity and Landscape Unit Planning guidebooks, FPC and LRMP(s) direction will assist in ensuring sustainable timber allocations and that such allocations do not compromise biodiversity characteristic objectives in both temporal and spatial parameters.

Numerous strategic planning initiatives (notably LRMPs) identify the need for coarse and fine filter ecosystem management activities. Filling knowledge gaps concerning such initiatives will assist development and implementation of regional (RMPs), sub-regional (Forest District LRMPs) and TSA planning. Timing of such planning initiatives varies across the Region.

Cross Reference to Management Unit Issues (if applicable):
As taken from 2001-2005 PRFR RMP, potential projects are listed in italics in the New Information and Tools column of the attached Table. This Table has been edited and referenced within Template 2.

A few of these are listed in the Regional Project Summary Table (Re1.21 A, B, C and D).

The strategy requires Region-wide PEM, but PEM projects are left to the District tables.

Table: Issue 1.21--Summary of Existing Information and Tools, their Inadequacies, and the New Information and Tools.

Biodiversity Coarse Filter Characteristics & Fine Filter Prescriptions	EXISTING DATA & TOOLS	ADDRESSING INADEQUACIES & INEFFICIENCIES	NEW INFORMATION & TOOLS
Coarse Filter:			
Comprehensive for all 6 characteristics	• Forest Cover / VRI • Some Ecosystem Mapping • Some SIBEC data linking timber productivity to site series	• Lack of ecosystem mapping for much of the PRFR • Implement existing plan to improve SIBEC data for those relationships with low to moderate reliability • Lack of a modeling environment that integrates spatial elements of biodiversity with timber supply variables	• *Predictive Ecosystem Mapping for all BEC zones in PRFR to be completed as per recent MEMO from PRFR Regional Manager* • *Implement plan to improve reliability of SIBEC data base* • *Workshop on Landscape level models, and choice of those with best functionality in terms of integrating biodiversity and timber supply parameters. To be completed by Fiscal (2001-02) year end and building on Richmond, BC Feb./March 01 Habitat Supply Decision Support Workshop initiative.*
Seral Stage Distribution	• Forest Cover / VRI • Some seral pathway data for assessing likely historical patterns	• Insufficient data or poorly documented data on successional pathways in some BEC subzones (i.e. projections for attributes other than those in growth and yield relationships, and for longer than economic rotations)	• *Workshop on successional pathways to identify data gaps/ data compilation opportunities and prioritize approaches to filling the gaps. Focus on habitat attributes that are not modeled in growth and yield curves. To be completed by Fiscal (2001-02) year end and building on Richmond, BC Feb./March 01 Habitat Supply Decision Support Workshop initiative.*
Distribution of Cut and Leave Areas (Temporal and Spatial)	• Forest Cover / FDPs / SPs • Landscape level Projection Models (e.g., SELES, TELSA, PROGNOSIS) • Management Unit level models (e.g., Atlas/Simfor, McGregor model, Woodstock/Stanley)	• Uncertainty as to adequate models for application in PRFR • Need for choice of hierarchical modeling structure, working at various scales	• *Workshop on Landscape and Management Unit level models, and choice of those with best functionality (see above)*
Old Seral Retention &	• Forest Cover / VRI	• Insufficient data or	• *Workshop on*

Biodiversity Coarse Filter Characteristics & Fine Filter Prescriptions	EXISTING DATA & TOOLS	ADDRESSING INADEQUACIES & INEFFICIENCIES	NEW INFORMATION & TOOLS
Representation	• Old Seral attribute measures in some portions of the PRFR	poorly documented data on successional pathways in some BEC subzones (Age is an insufficient measure of various mature and old seral stand attributes) • Fill in gaps in descriptions and attributes of old seral in various subzones by site series	*successional pathways (as per Seral Distribution above)* • *Combine PEM coverage with either VRI or other field measures of old seral habitat attributes by site series as a basis for habitat supply modeling* • *Old Seral Inventory – VRI with additional ground truth sampling to describe range of attributes by SS*
Landscape Connectivity	• Forest Cover / VRI / some site series mapping / some animal distribution and movement data	• Lack data for some BEC subzones on degree of connectivity under natural disturbance regime NDT3 ? • Lack mapping of current prime movement corridors for wildlife • Lack modelling tool to evaluate / implement dynamic landscape connectivity	• *Field inventory of principal movement corridors (game trail mapping; migratory bird surveys), using Traditional Ecological Knowledge(TEK) to stratify effort* • *Workshop on fire history data gaps,* • *Review fire history data to assess connectivity in NDT3 (Data compilation & analysis)* • *Workshop on Landscape & Management Unit level models, & choice of those with best functionality (see above)*
Stand Structure	• Some VRI • Some licensee and other literature on stand structural attributes by site series	• Assess sufficiency of existing Forest inventories (e.g., forest structure, VRI) in mapping stand structural attributes, and develop plan and strategy to inventory outstanding areas by site series	• *Workshop to review sufficiency of existing inventories and data, and develop strategy. This workshop may be possible in concert with aforementioned workshops but anticipate a future fiscal year independent initiative.*
Species Composition	• Forest Cover / VRI / SPs • Various ecosystem and G &Y plots	• Insufficient data or poorly documented data on successional pathways in some BEC subzones (habitat supply models need projections of deciduous & mixed-wood forest succession, pathways with mixed canopy composition, & changes in sp compositn over time frames longer than economic rotations)	• *Workshop on successional pathways to identify data gaps/ data compilation opportunities, and prioritize approaches to filling the gaps (see above). This workshop may be possible in concert with aforementioned workshops but anticipate a future fiscal year independent initiative.*
Fine Filter			
Riparian Management Areas	• Stream classification to document location and extent of various stream classes through many chart areas • Some existing	• Incomplete classification of some chart areas • Uncertain validity of some classifications (see Issue 3.11 & 3.13)	• *Complete stream classifications* • *Systematic checking of inferred classification procedures (as per other Issues)*

Biodiversity Coarse Filter Characteristics & Fine Filter Prescriptions	EXISTING DATA & TOOLS	ADDRESSING INADEQUACIES & INEFFICIENCIES	NEW INFORMATION & TOOLS
	prescriptions for certain BEC subzones	• Incomplete assessment of riparian habitat needs of semi-aquatic mammals (beaver, river otter, mink)	• ***Field inventory to document riparian habitat selection by river otters & mink for latrines and haul-outs, and recommend stand level prescriptions***
Lakeshore Management Areas	• Lake classification system under the FPC	• Incomplete assessment of riparian habitat needs of semi-aquatic mammals (beaver, river otter, mink)	• ***Field inventory to document riparian habitat selection by river otters and mink for latrines and haul-outs and recommend stand level prescriptions***
Wildlife Habitat Areas	• Identified Wildlife Management Strategy of the FPC • Some inventory data on critical habitats for Identified Wildlife Species	• Incomplete inventory data on critical habitat locations for Identified Wildlife	• ***Field inventory for:*** - ***Sandhill Crane nesting and foraging wetlands (NC)*** - ***Mountain Goat natal areas, licks & winter range (NC, Ka, Ki, Mo, La, Ca)*** - ***Tailed frog natal streams (NC, Ka)*** - ***Trumpeter Swan nesting areas (Ca)*** - ***Marbled Murrelet nesting areas (NC, Ka)*** - ***Northern Goshawk nesting areas (all districts)***
Monitoring Procedures			
Monitoring Protocols for the Six Biodiversity Characteristics	• Some ongoing monitoring of G&Y plots by gov't • Some monitoring protocols in place through licensees • Ongoing updates to FC / VRI and other inventories	• Lack of formalized monitoring protocols agreed to by various gov't agencies and licensees	• ***Workshop(s) to assess monitoring needs and possible protocols for various biodiversity characteristics objectives and parameters. Workshop(s) may be possible in concert with aforementioned workshops but anticipate a future fiscal year independent initiative.***

4.3.1.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
The table above outlines the existing information, new information and tool requirements and effective linkage between both via the address of inadequacies and inefficiencies. In addition to attendance at noted workshops, workshop conclusions and results are to be disseminated to various planning groups/activities to facilitate strategic and operational planning activities.

Status of Existing Knowledge:
This is also delineated within the table above by respective filter prescription.

Required Knowledge-Building Activities in these Areas (as applicable):
Please see table above. Further requirements include:

Knowledge: Mean, variation and range for parameter values and/or indices that best describe each of the six Biodiversity Guidebook characteristics.

Methods and Tools: Modelling systems that work spatially, and at various scales, with concurrent projections of the key elements of biodiversity and timber supply (e.g., including site series related timber supply, stand structural attributes in successional pathways, natural disturbance regime profiles). Also required are monitoring protocols involving specific indicator variables or processes of coarse and fine filter application. The above Table also summarizes existing knowledge, method and tools, approaches for dealing with inadequacies in existing information and tools, and new information and tools. These include various Workshops needed to integrate the expertise of MoF, MELP, licensee and private sector experts in coming to agreement on key tools and methods, prioritizing data gaps, and designing modelling protocols. There are a few field inventories that ideally should be undertaken, and the strategy depends on Regional Predictive Ecosystem Mapping (PEM), which is primarily an integration of existing inventories.

Define Performance Indicators, Targets & Milestones:
As per above Table. The following sub-section also identifies potential objectives for future fiscal year workshop activities. Current fiscal year initiatives will assist in deciphering future workshop requirements. Information dissemination will assist a wide array of planning initiatives at a myriad of scales.

Relationship to Other SSFM Knowledge Strategies (if applicable):
As taken from 2001-2005 PRFR RMP, potential projects are listed in italics in the New Information and Tools column of the above Table.
A few of these are listed in the Regional Project Summary Table (Re1.21 A, B, C and D). The strategy requires Region-wide PEM, but PEM projects are left to the District tables.

Cross Reference to Management Unit Activities: Bu3, Bu7.

4.3.1.3 Description of Activities

Region

SSFM Issue #: 1.21	**Activity: Coarse and Fine Ecological Filter Issue Determination Workshops**	**Activity #: 1.21 A-D**

Summary:
Please see Table 3.1.1 of the PRFR 2001-05 RMP and Template 2 Table attached. This is to be region wide and fiscal year 2001-02 specific. Tools and information devised and synthesized at workshops to be disseminated to respective planning unit staff charged with delivery of planning initiatives. Based on feedback and outcome of use of information additional fiscal year workshops may be warranted to adjust tools, calibrate models, initiate new workshops (e.g., stand structure and species composition delineation) as well as delineate appropriate monitoring parameters.

Status: Existing

Objectives:
To facilitate and disseminate information and tools to be gleaned in workshop settings related to establishment of coarse and fine filter ecological biodiversity characteristic objectives. Development of monitoring methods and tools to decipher implementation and effectiveness of the respective biodiversity characteristic objectives is an additional objective. This information will be of primary benefit to individuals involved in strategic and operational planning initiatives and activities within respective planning units.

Tasks, Deliverables, Targets and Milestones:
As per Template 2 Table attached. Future fiscal year end required completion dates by respective fiscal year.

Cost Sharing:
A primary search of strategic planning initiatives across the region will assist in narrowing the scope for the workshop settings. No formal cost shares exists. In kind contributions will include Ministry staff involvement and organization.

Partnerships: To be determined.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
18,000	1	72,000	72,000				162,000	3

Bulkley-Cassiar Forest District

SSFM Issue #:1.21	**Activity: Predictive Ecosystem Mapping within the Bulkley TSA**	**Activity #: Bu3**

Summary:
To provide baseline inventory (coarse filter) to allow an ecological approach to spatial modeling, analysis, and monitoring of wildlife habitat supply, rare and endangered ecosystems, site productivity, landscape connectivity, etc. supporting LU, TSA, LRMP planning, TSR , and sustainable forest management.
i. Generate PEM through the integration of existing inventories (FC, TRIM, BEC)
ii. The entire Bulkley TSA will be covered.

Status: Existing.
Bulkley previously invested in ECOGEN (PEM) model development.

Objectives:
One of the high priority regional issues for Bulkley is an understanding of how we can ensure landscape units retain appropriate biological attributes represented in riparian old growth management areas (OGMAs), FENs, sensitive areas (Issue 1.21).

This activity is clearly inter-related to SSFM issues 1.32, 2.11, and 2.21 as expressed in the Bulkley priority issues Bu1, Bu2, Bu6, and Bu7 defined in the 2001-2005 RMP.

Specifically Bulkley is not able to spatially or temporally map and analyze the ecosystem networks required by higher level plans and operational processes. There is an inability to identify whether or not the current ecosystem network placement maximize or protects the needs of the habitat and biodiversity requirements they were designed to provide for.

In order to address this question the first step is to acquire an ecosystem map that defines site series. Once site series is determined the attributes that are available now and in the future can be modelled. The most efficient way to obtain ecosystem mapping is through PEM. Once PEM is in place then further modelling exercises can be determined for improved site productivity estimates, identified wildlife species, etc. Other activities that benefit from PEM and will fill major knowledge gaps for Issue 1.21 in the Bulkley over the next 5 years are:

TSA / LU Spatial Modeling (Bu7) which provides the ability to model and project future stand conditions i.e. size, distribution, yields and supply trends which support measurement and monitoring of key indicators.

Upper Operability Study (Bu9) which help to define limits or restrictions on resource values.

Telkwa Caribou Monitoring Study (Bu14) to identify habitat preferences and responses to natural pressures and disturbances.

Babine Grizzly Monitoring Study (Bu17) to determine impacts on, and status of the population, extent of range, habitat use, site specific habitat features and movement patterns.

Tasks, Deliverables, Targets and Milestones:
i. PEM baseline inventory for all 86 mapsheets within the Bulkley TSA.
ii. To be completed by the end of the 2002/3 fiscal year.

Cost Sharing:
Funding required from MYA holders with possibility of resource support and expertise from MoF research and MSRM GIS specialists.

Partnerships: No partnership agreements in place at this time.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
35,000	1	80,000					115,000	2

SSFM Issue #: 1.21	**Activity: Spatial Modelling**	**Activity #: Bu7**

Summary:
To develop TSA and Landscape Unit level spatial modelling tools to assess impacts of current practice, policy and objectives.

i. Spatial modeling tools will be developed to assess impacts of current management practice on future target forest conditions as described in Landscape Unit Plans.

ii. Baseline information for the entire Bulkley TSA will be established.

Status: Existing.
The Bulkley TSA has invested in this activity for the 2 previous fiscal years.

Objectives:
One of the high priority regional issues for Bulkley is an understanding of how we can ensure landscape units retain appropriate biological attributes represented in riparian, Old Growth Management Areas (OGMAs), FENs, sensitive areas (Issue 1.21)

This activity is clearly inter-related to SSFM issues 1.21, while also being related to 2.21, and 5.21 as expressed in the Bulkley priority issue Bu1, Bu2, Bu3, Bu5, Bu6, Bu7, and Bu14.

Currently there is a need for development of spatial modeling tools which can analyze the impacts of current forest practice and strategic management objectives. The ability to model and project future stand conditions, to properly assess and value investment opportunities, project future resource yields and supply trends, and measurement and monitoring of key indicators are basic to assumptions made around sustainability.

The approach necessary to address this problem is the selection and development of a spatial model which can manage both TSA and LU data sets, and provide for analysis outputs with an appropriate level of resolution. This is determined by assessing the strength and weakness of the potential spatial modeling tools and selecting one which provides the best match with our objective. Modelling exercises will then be initiated using both TSA and LU data sets to determine impacts of know values and constraints on current and future forest management practice.

Tasks, Deliverables, Targets and Milestones:
i. Complete TSA and Landscape Unit level spatial modelling to assess spatial impacts of current practices and policies. This activity has a direct link to level two and three silviculture analysis being completed throughout the Province.

ii. To be completed by the end of the 2004/2005 fiscal year.

Cost Sharing:
Funding required from MYA holders with possibility of resource support and expertise from MSRM Planning and GIS specialists.

Partnerships: No partnership agreements in place at this time.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
35,000	2	50,000	50,000				135,000	4

4.3.2 Issues 1.23 & 3.11--How can we best manage harvesting and crossing S4-S6 streams to protect habitat and water quality and quantity?

4.3.2.1 Description of Issue

Overview Description of the Regional Strategic Issue:
There is continuing debate and uncertainty regarding how to reduce or eliminate fish / forestry and aquatic resource / forestry interactions, concerning S4 – S6 streams and their riparian zones. This issue may be largely resolved in the Region through an adaptive management approach over the next 3 – 5 years. Detailed knowledge of the relationships between forest harvesting and roads adjacent to streams and their influence on fish/fish habitat, riparian-zone-dependent wildlife/habitat, water quality and water quantity is necessary for sustainable forest management. This knowledge may be obtained through adaptive management methods using "upfront" manipulations of forest practices as experimental treatments and/or examining the range of existing/actual conditions on the landscape as experimental treatments. Existing published work on this subject needs to be better summarized and updated. Gaps in this knowledge must be filled through new work, and the body of knowledge put to use in operational decision making processes.

Decision-making systems including regulatory and product certification frameworks rely on a mix of prescriptive and performance based components, and therefore this new knowledge must be adapted for use in these contexts.

Even with this knowledge in hand, part of the issue will be resolved through establishing acceptable tradeoffs in resource values. Means of establishing these tradeoffs may be found in forest management system modelling (ex. MacGregor Forest Model) or through forest ecosystem or forest landscape modelling. An example of this may be mimicking natural disturbance regimes with forest harvesting. Natural disturbance regimes would dictate the terms used to judge the acceptability of the mix of resource values inherent in a managed forest.

Relationship to Sustainable Forest Management:

i. The maintenance of environmental values

Fish/forestry and aquatic resource/forestry interactions continue to be the subject of debate and uncertainty. A better knowledge base used to adaptively manage for biodiversity and identified wildlife in riparian and aquatic environments will reduce real and perceived uncertainties. New information will help provide clarity for strategic decisions on when and where environmental and forest harvesting values are actually in competition, and to what degree. This information, integrated into newly developed performance based decision making systems will provide a means of reaching a common understanding among stakeholders of the real relationships between forest harvesting and the maintenance of aquatic resource values on an ongoing basis.

ii. The sustainable use of timber resources

In gaining a better understanding of what actual circumstances cause competition between aquatic resource and timber values, uncertainty in strategic decisions will be reduced. Using performance based methods, a common understanding of demonstrable interactions between these resource values will assist in public consensus building in decision-making processes.

iii. The sustainable use of non-timber resources

There are significant risks/uncertainties (both actual and perceived) related to the maintenance of drinking water supplies, water quantity for maintenance of fish and other aquatic values, and maintenance of wildlife that are dependant on riparian zones, under a range of conditions created by existing forest practices. Better knowledge on a regional basis of where these risks actually apply, and to what extent, will increase certainty around strategic decisions.

Relationship to Strategic Resource Plans and Decisions:

Strategic Decisions

TSRs do not currently explicitly address aquatic or riparian related environmental constraints on timber supply, in relation to S5 and S6 streams. This knowledge gap regarding aquatic environments could be filled over the long term and the information used for modeling various management regimes.

Strategic Resource Plans

Strategic resource plans stipulate that a range of environmental and non-timber values be protected. Filling the "stream resource protection / forest harvesting" interactions knowledge gap will provide a means to operationally implement this aspect of a strategic plan. Once developed, performance measures associated with S4 – S6 stream protection will be available for use in strategic plan effectiveness monitoring and forest product certification processes.

Cross Reference to Management Unit Issues (if applicable):

4.3.2.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:

Detailed knowledge of the relationships between forest harvesting and roads adjacent to streams and their influence on fish / fish habitat and riparian zone dependent wildlife / habitat, water quality and water quantity is necessary for sustainable forest management. This knowledge may be obtained through adaptive management methods. Existing published work on this subject needs to be better summarized and updated. Gaps in operational knowledge (some of which are already known), must be filled through new work, and the body of knowledge put to use in decision making processes.

Decision making systems including regulatory and product certification frameworks rely on a mix of prescriptive and performance based components, and therefore this new knowledge must be adapted for use in these contexts.

Status of Existing Knowledge:

i. Organization, synthesis and analysis:

DFO, MELP and MoF staff, and local consultants already have some of the necessary expertise on this issue. Assessments such as CAPs, GAPs, WAPs, FHAPS, WRP level 1 & 2 assessments, WRP fish passage assessments, fish stream classifications (S1 – S6), fish inventories, hydrometric inventories and assessments, site specific and landscape level aquatic impact assessments, and modelling case studies all contribute to information needs. Updateable forest management guidance documents need to be written.

ii. Extension:

Inventories, assessments and classifications are being published and disseminated to forest managers as they become available.

iii. Research:

FRBC Research $ are being used to provide experimentally derived guidance.

iv. Monitoring:

FRBC SSFM $ are being used in Goals Agreement and MYA projects to provide experience derived guidance.

Required Knowledge-Building Activities in these Areas (as applicable):

Organization, Synthesis, Analysis: Knowledge gap analysis using current literature will assist in establishing the terms of reference for ongoing and future work. The range of assessments, reports and information sources need to be better integrated to guide forest managers in the region.

Resource Inventory: some examples of new information which may resolve the issue include:– "1 off" type projects such as terrain stability assessments in "high risk" watersheds.

- Inventory of activities around high elevation, non-fish bearing streams (S5 and S6) which may affect lower elevation fish bearing streams (S4).
- multi-year assessments such as:
  - Obtain an adequate small watershed hydrometric monitoring record to develop a set of region-specific guidelines for stream protection,
  - Develop and apply on a district-wide basis, biocriteria (ex. Benthic IBI), or water quality criteria (ex. temperature criteria to protect salmonids) - in performance monitoring,
  - Develop and validate models of stream condition or riparian condition as related to timber harvesting variables such as rate of cut, or harvesting methods (mimicking natural disturbance, for example).

Extension: Databases, inventories and assessments need to be better synthesized for use in adaptive management processes, and made easily available to forest managers in more useable formats (guidance documents).

Research: Recent and emerging research findings need to be summarized and integrated into adaptive management decision making. The system for disseminating this information as it is produced needs to be improved.

Monitoring: Relevant monitoring data and assessments (see "resource inventory" above) need to be integrated into adaptive management decision making on an ongoing basis.

Define Project Performance Indicators, Targets & Milestones:
Periodic reviews of progress towards issue resolution can be incorporated into existing planning and regulatory processes. This may include TSR updates, LRMP effectiveness monitoring programs, RMP reviews, and forest product certification performance reviews by licensees. Each component project used to resolve this issue must include a measurable indicator which links the project outcome to reducing risk or uncertainty associated with decision making. For instance, a model which predicts where stream temperature increases may be of varying degrees of concern for fish survival would be judged in terms of whether or not it adequately predicted actual conditions. It could also be judged on whether it reduced the number of locations subject to debate over this issue.

Relationship to Other SSFM Knowledge Strategies (if applicable):
This strategy is a consolidation of issues 1.23 and 3.11 from the previous RMP. It is also inter-related with 3.12.

Cross Reference to Management Unit Activities: Re1.23/3.11, La2, Mo7a/b, Mo12, Bu4, Bu11, Ki5-H04, Ki3-H05, Ka4.

4.3.2.3 Description of Activities

Region

SSFM Issue #: 1.23, 3.11	**Activity: manage harvesting and crossing S4 – S6 streams to protect habitat and water quality and quantity**	**Activity #:**

Summary: Improve knowledge of fish / forestry, aquatic resource / forestry interactions to resolve issues related to protecting S4 – S6 streams in harvested areas.

Overview of tasks: update state of knowledge through a literature review, provide new adaptive management derived information in the context of forest management decision making frameworks (to be done as a Regionally coordinated project.

Geographic area: proceed with projects on a District by District basis (Pr. Rupert Forest Region/MELP Skeena Region wide) through MYA holders. It is anticipated that Regional $ will be allocated for the update and to partner with MYA holders, to integrate scientific data aimed at issue resolution and to apply forest management decisions uniformly across the region

Status: Existing
4 years of FRBC funded inventories and assessments and other studies already completed. Continuation of this work is needed, with emphasis on integration of findings into forest management decision processes.

Objectives:
Reduce uncertainty regarding means by which forest management provides for or may provide for protection of S4 – S6 streams. Summarize existing information and generate new information on interactions between forest practices (existing/experimental) and desirable S4 – S6 stream attributes (riparian and aquatic habitat and ecosystem attributes, including physical and biological measures). Develop means to allow access to this information throughout the Region.

Tasks, Deliverables, Targets and Milestones:

i. Region and/or District specific reports on what forest practices are shown to be protective of S4 – S6 streams. Develop guidelines for forest management based on this info. Provide framework for performance based monitoring to ensure ongoing protection of S4 – S6 streams.

ii. A 5-year period will be required to resolve this issue to a substantial degree. Regional coordinating involvement will be required in the 1st 2 years. ($100K/year over 2 years proposed in Template 4) for the following: literature review focussing on knowledge gaps, updating of regional guidelines for issue resolution using District specific data and decision processes, and further refinement of assessment tools for use by licensees. After this 2 years of regional coordinating work, licensees may continue adaptive management projects for the remainder of the planning period (3 more years). There will be progress and final reports for aspects of the strategy each year in the 5 year period. They will be written to provide interim guidance to forest managers. In year 5, a final guidance documents for forest managers will be produced.

Cost Sharing: MYA holder FRBC funding

Partnerships:
MELP, MoF, licensee partnerships will be negotiated on a district by district basis. MELP and MoF participation will ensure consistent / integrated project design throughout the Region.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
500,000	4	100,000	100,000	100,000	100,000	100,000	200,000	5

Lakes Forest District

SSFM Issue #: 1.23 **(1.21, 1.32, 3.11, 3.13)**	**Activity: Fish Habitat Inventory**	**Activity #: La2**

Summary:
This activity involves surveying and then classifying the remainder of the unclassified streams within the Lakes Forest District (except for protected areas and provincial parks) for fish habitat and the presence of fish.

Status:
This is an existing project that is planned to be completed in the 2002-2003 fiscal year.

Objectives:
Uncertainties around crossing S4 and S6 streams (Issue 1.23 & 3.11) have a major impact on planning and operations. Completion of the Fish Stream Habitat Inventory for the Lakes District in the 2002 field season will provide planners with information to make cost effective decisions regarding stream crossings, as well as block and road layout.
This total inventory of all stream classifications in the district should be collected in MELP format for inclusion in the FISS database.

Completion of The Fish Stream Habitat Inventory will provide a sound database for the management of our streams.

Objective 1.21 Provides information to the LU planning process and allows for appropriate riparian attributes to be represented.
Objective 1.23 Provides information for the best management practice for S4-S6 streams and protecting and conserving fish habitat.
Objective 1.32 Provide information to the TSR process to ensure that proper riparian information is used in the modeling process.
Objective 3.11 Provides information to allow for making management decisions relating to stream crossings and harvesting in riparian areas.
Objective 3.13 Will classify all streams within the Lakes District reducing the need for a strategy relating to unclassified streams.

Tasks, Deliverables, Targets and Milestones:
This project involves surveying and sampling each stream for fish species (often more than once). The products from this project include mapping, describing and classifying all streams within the Lakes Forest District.

This project will be completed with deliverables by the end of the 2003-2004 fiscal year.

Cost Sharing:
There are currently no cost sharing or in kind agreements applying to this project. The Lakes District Small Business Enterprise program also completes stream habitat surveys and this information reduces the number of streams that require sampling under this project.

Partnerships: There are no partnership commitments for this project. The information gathered from this project will be available to all interested parties.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
700,000	6	200,000	0	0	0	0	900,000	7

Morice Forest District

SSFM Issue #: 1.23 **(1.32, 3.13)**	**Activity: Fish Habitat Inventory**	**Activity #:** **MO7a/b**

Summary:

i. Collection of field data, organization and standards for information database, the development of management strategies and closing the gap in data regarding like inventories for Char

ii. Morice

Status: Existing

Objectives:

Under the FPC Operational Planning Regulations, licensees are obligated to complete fish and fish habitat assessments. Collection of this information is one of the key assessments needed for timber acquisition. By collecting the stand level information, licensees will be in a good position to provide fish and fish habitat assessments when requested by the DM.

- Fish Inventories are needed by licensees to meet their legal FPC planning requirements. Identification of existing habitat, fish occurrence, fish distribution and populations will provide licensees with the required information to meet operational needs. This information also needs to be organised into an acceptable standard for use and easy access.
- Complete Lake Char data collection before completing fish habitat inventory.
- Continue field data collection to develop management strategies and predictive tools to ensure sustainable management of population

Currently, TSR does not address timber constraints for managing Fish habitat. Fish species and habitats have been identified as an important value during the IFPA process. Licensees, MoF and MELP have identified the lack of fish inventory habitat information as a critical gap in knowledge. Conservation and enhancement of sustainable fish populations cannot be done without understanding habitat range and population dynamics.

Tasks, Deliverables, Targets and Milestones:

i. District wide Fish inventory, organization and standards set for easy access of fish information and development of management strategies for sustainable management of fish habitat.

ii. Fiscal 2003-4.

Cost Sharing:

Funded by MYA holders. The costs below reflect both HFP and CANFOR's proposed costs.

Partnerships:

Fish inventory (inclusive of Lake Char) will be shared between Licensees, agencies and First Nations.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
1,404,000	4	100,000 (canfor) 180,000 (hfp)	180,000 (hfp)				1,864,000	6

SSFM Issue #: 3.11 **(1.23, 1.32)**	**Activity: Temperature Sensitive Streams**	**Activity #: MO12**

Summary:

i. Identification of temperature sensitive streams and development of management strategies to protect riparian and fish values while allowing harvest.
ii. Morice

Status: Existing

Objectives:

Temperature Sensitive Streams are identified in the Interior IWAP guidebook. Licensees, MELP, MoF and DFO have identified the management of temperature sensitive streams as a significant issue at the operational level. Currently, there is a knowledge gap with respect to the location and management of these streams and to ensure that the values associated with them are protected and sustainably managed. Identification and management of temperature sensitive streams may have application to the management of other stream systems in the district.

Currently, TSR does not address timber constraints for managing temperature sensitive streams in the district. Licensees, MoF and MELP have identified the lack of temperature sensitive stream information as an important gap in knowledge, at the operational level.

Tasks, Deliverables, Targets and Milestones:

i. Identification of temperature sensitive streams in the district, identification of potential temperature sensitive streams and development of management strategies to manage riparian habitat and associated values.
ii. Fiscal 2003-4.

Cost Sharing: RIP funding for project coming from Region - Research.

Partnerships:

The information and management strategies developed for this project will be shared with licensees, agencies and First Nations.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	**$$** 2002/03	**$$** 2003/04	**$$** 2004/05	**$$** 2005/06	**$$** 2006/07	**$$** Total	
56,000	2	35,000	30,000	?			121,000	4

Bulkley-Cassiar Forest District

SSFM Issue #: 1.23 & 3.11	**Activity: Fish Stream Inventory within the Bulkley TSA.**	**Activity #: Bu4**

Summary:
The purpose of this activity is to define the population of interest so that specific issues (eg specific species susceptibility to temperatures) can be explored and strategies developed that will have significant relevance within the Bulkley TSA.

Assessing the quantity and location of the population is the first step in completing this task.

i. This will be done through the completion of 1:20K second sample fish habitat inventories to accurately classify the smaller stream reaches within the Bulkley TSA.
ii. Fiscal year 2002-2003 projects will target 3-5 additional watersheds within the Bulkley TSA.

Status: Existing.

Objectives:
Two high priority regional issues for the Bulkley is an understanding of how we can best manage harvesting around and crossing of S4-S6 streams to protect and conserve habitat, and to adequately protect and conserve water quality and quantity (Issues 1.23 & 3.11).

This activity is inter-related to SSFM issues 1.23 and 3.11 as expressed Bulkley priority issues Bu4 and Bu5.

This is a going classification of streams within the Bulkley to develop an inventory of critical fish habitat. By conclusively defining the population of interest, modelling of various issues discussed in the knowledge strategy can be focused on problems that have a significant effect on the fish resources of the Bulkley TSA.

Tasks, Deliverables, Targets and Milestones:
i. The products produced include a comprehensive fish stream classification report and digital and hard copy mapping products in ARC format suitable for use in future modelling exercises.

ii. Completion date = March 31st.

Cost Sharing:
Cost sharing of fiscal year 2001-2002 projects exists between SCI and PIR and a similar relationship will be explored for the 2002-2003 fiscal year.

Partnerships: As discussed in Cost sharing above.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
PIR 500,000 SCI 148,000	5	PIR 150,000 SCI 50,000	PIR 100,000 SCI 50,000	0	0	0	PIR 250,000 SCI 100,000	7

SSFM Issue #: 3.11	**Activity: Water Quality Monitoring Using the Benthic Invertebrate Index (B-IBI)**	**Activity #: Bu11**

Summary:
This project will provide baseline information on current water quality to permit assessment of changes to water quality over time. This information will then be used to support develop of a forest management effectiveness monitoring and evaluation processes for analysis in support of LU, TSA, LRMP planning, TSR, and sustainable forest management including aquatic habitat supply.

i. Conservation of water resources (including water quality) is one of the CCFM criteria for demonstrating sustainable forest management. Effective monitoring tools are required. Development of a baseline Benthic Invertebrate Index for Bulkley streams is seen as a viable method to monitor water quality over time.

ii. Baseline information for the entire Bulkley TSA will be established.

Status: Existing

The Bulkley TSA has invested in this activity for the 2 previous fiscal years.

Objectives:
A high priority regional issue of importance to the Bulkley is: "How do we manage harvesting around and crossing of streams to adequately protect and conserve water quality and quantity (Issue 3.11)?"

This activity inter-relates to other regional issues 3.12 and 3.14 with linkages to Bulkley priority issues Bu3, Bu4, Bu5, and Bu8.

At the present time the Bulkley is unable to objectively measure impacts of harvest activity or natural process on stream conditions over time.

This activity is focused on the development a biological tool for stream assessment and monitoring, which could be used together with physical and chemical assessments (e.g. WAP, FHAP) to evaluate the impacts of management activity on the aquatic resources.

Tasks, Deliverables, Targets and Milestones:

i. Continue an benthic invertebrate index baseline study within the Bulkley TSA .

ii. To be completed by the end of the 2004-05 fiscal year.

Cost Sharing: Previously cost shared between MELP and MYA (PIR) holders.

Partnerships: Pacific Inland Resources, MELP, MoF.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
40,000	2	30,000	30,000	30,000			130,000	5

Kispiox Forest District

SSFM Issue #: 1.23	**Activity: 1:20,000 Reconnaissance Fish and Fish Habitat Inventory**	**Activity #: Ki5-H04**

Summary:
Baseline Fish and Fish Habitat Inventory (FFHI) remains a high priority for SCI and MELP Region. This information is used directly for several levels of strategic and operational planning. Appropriate classification of streams is a key factor is protecting water quality and resources. As inventories are conducted across the District and Region, broad-scale species distribution information for rare or threatened species, such as Bull Trout, are delineated facilitating more directed work or appropriate strategic planning. Stream classification information derived directly from FFHI inventories or modelled from MELP's FHAT tool will facilitate the incorporation of riparian classification information into future TSR and AAC reviews.

Unlike many Licensees in the Region and the Province who focussed much of their FRBC allotments on stream inventory in the initial years of the program, SCI has balanced stream inventory with other inventory projects, and, as a result, will require additional years to complete reconnaissance stream inventory across their chart areas. This strategy is consistent with FRBC's multi-year funding approach.

Status: This is an ongoing project.

Objectives:
The purpose of Reconnaissance Fish and Fish Habitat Inventory is to describe watershed wide fish distributions and habitat characteristics for all watersheds within the project area.

This project also addresses aspects of issues 2.21 and 3.11.

Tasks, Deliverables, Targets and Milestones:
Tasks will follow Resource Inventory Committee standards for "Reconnaissance (1:20,000) Fish and Fish Habitat Inventory".

Deliverables will include annual final reports with maps detailing the results of the inventory.

Each year target project areas will be identified and all field inventory and reporting will be completed for that area with that fiscal year.

Cost Sharing:
Operational stream inventory information and historic MELP stream and lake inventory information is used wherever possible to minimize the number of new sample sites that are required for the

Partnerships: Key partners in this project include MELP Region and District.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
$675,000	5	$125,000	$125,000	$125,000	?	?	$375,000	8-10

SSFM Issue #: 3.11 (1.,23)	**Activity: Calibration of Benthic Invertebrate for Index of Biologic Integrity**	**Activity #: Ki3-H05**

Summary:
Many efforts to monitor and assess aquatic resources have been based entirely on the condition of the habitat (e.g. riffle: pool ratios, presence / absence of large woody debris) or specific water quality parameters (e.g. turbidity), without any measure of stream biota. Although habitat assessments are valuable, they cannot predict biological condition. Ultimately, this means that many of the decisions made regarding the future of streams (e.g. further development within a watershed or rehabilitation of a degraded stream) are made without knowing the biological condition or integrity of those streams. Complex monitoring strategies require highly specialized personnel to collect, analyze and interpret collected data. This process can lead to delays in communication of information to community stakeholders and decision-makers, and may result in **insufficient or overly protective aquatic resource management strategies**. Further, the high cost of many monitoring strategies is a large funding pressure and often results in incomplete or cancelled assessments when funding resources become scarce. Many expensive watershed restoration works and rehabilitation efforts are completed without monitoring programs in place to assess changes in biological condition and successfully evaluate their effectiveness.

The index of biological integrity (IBI) is an approach that relies on biological data to assess the condition of a stream. Biological integrity is defined as 'the ability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity and functional organization comparable to that of natural habitat of the region' (Karr et al., 1987).

Benthic invertebrates are a good choice for bio-monitoring. The benthic invertebrate index of biological integrity (B-IBI) has been shown to be an effective tool for assessing and measuring stream condition, in a number of states in the USA (Fore et al, 1996; Karr and Chu, 1999). Not all metrics respond to increasing land use the same way in different geographic areas, and to use the tool locally, it must be calibrated for streams in this region. With funding and support from the Kispiox Forest District Small Business Program, calibration of an index of biological integrity for streams in the Kispiox River watershed began in 1999. During the first phase of this project, the index of biological integrity was shown to be an effective stream condition assessment tool for streams in and adjacent to the Kispiox River watershed. Nine metrics were identified which successfully distinguished uninfluenced from heavily influenced sites and were included in the locally calibrated IBI. However, calibration of an IBI is an iterative process, and recommendations focused on reassessment of the core metrics. This included an expanded group of stream sites including additional uninfluenced sites and highly degraded urban streams, and testing the locally calibrated IBI over a larger geographic area. The overall objective is to develop a framework for incorporating biological monitoring of streams into forest resource management decisions.

Please refer to the report "Expansion and recalibration of the Kispiox Benthic Invertebrate Index of Biologic Integrity, March 2001" for further information regarding the Small Business Project.

Status:
The Kispiox Forest District Small Business Forest Enterprise Program has been creating and calibrating the IBI for three years, with the use of SBFEP funds. Regionally, Ian Sharpe for BC Environment has received partial funding from FRBC to calibrate IBI in other forest districts (such as the Bulkley Forest District). This is the first request to FRBC for funding in the Kispiox Forest District.

Objectives:
Regional issue 3.11 is to manage harvesting round crossing streams to adequately protect and conserve water quality and quantity. The IBI project will give a tool that can monitor what impacts our activities are having on **water** quality and to monitor change in water quality over time. This project also partly addresses issue 1.23 to best mange harvesting and crossing os4 and S6 streams to protect and preserve fish.

The objective of this project is to continue to calibrate the IBI in the Kispiox Forest District by expanding to other locations in the district. The second objective will be to test the methodology that is currently being employed to ensure accuracy. This relates to the knowledge strategies relating to resource inventory and organization, synthesis and analysis.

Tasks, Deliverables, Targets and Milestones: With this funding, additional streams will be measured in conjunction with the Kispiox Forest District SBFEP project. A report will be produced by March 2003.								
Cost Sharing: Cost sharing will occur with the Kispiox Small Business Program.								
Partnerships: Kispiox SBFEP – expertise and funding Region BC Environment – expertise.								
Investment to date		**Investment** Required						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		$15,000	$15,000				$30,000	2

Kalum Forest District

SSFM Issue #: 1.23		**Activity: Fish & Fish Habitat**					**Activity #: Ka 4**	
Summary: Fish & fish habitat mapping in 9 drainages in the Kalum & Nass TSAs and TFL 41. Complete ongoing work on stream reach classification.								
Status: Existing								
Objectives: Complete inventories to RIC standards.								
Tasks, Deliverables, Targets and Milestones: Mapping of fish species & presence in 9 drainages. Complete stream reach classification.								
Cost Sharing:								
Partnerships:								
Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
135,000	2	135,000						3

4.3.3 Issue 1.32--For what forest resources are we lacking a complete and integral inventory to meet TSR requirements?

4.3.3.1 Description of Issue

Overview Description of the Regional Strategic Issue: The TSR is the process by which the Chief Forester determines AACs for each TSA and TFL in the province. The Chief Forester must consider all forest resources when determining AACs. In order for him to do this, he must have accurate inventories of these resources. The TSAs of the Prince Rupert Forest Region vary in terms of their requirements for updated, improved, and new information on various forest resources.

Relationship to Sustainable Forest Management:

i. The maintenance of environmental values

There are risks and uncertainties regarding environmental values that arise from the lack of good knowledge about forest resources & the subsequent lack of suitable management guidelines & objectives for those resources. Better info on i.e. rare ecosystems, botanical forest products, wildlife and fisheries populations and habitats, & biodiversity would guide forest management practices which would be analyzed in the TSR process to assess impacts on timber supply.

ii. The sustainable use of timber resources

What are the most significant risks/uncertainties related to timber supply, and where could better knowledge significantly increase certainty about the effects of strategic decisions?

There are risks and uncertainties related to timber supply which arise from the lack of good knowledge about the timber resource. The Timber Supply Review process analyzes the impacts of forest management practices on the timber supply. The AAC is determined largely from the results of this analysis. Better knowledge of the timber resource (i.e. inventory, growth and yield, operable areas, site productivity) will support a more accurate forecast of the timber supply over time, and assist the chief forester in making an AAC determination.

iii. The sustainable use of non-timber resources

What are the most significant risks/uncertainties related to non-timber resources (e.g., water, botanical forest products) and where could better knowledge significantly increase certainty about the effects of strategic decisions?

There are risks and uncertainties regarding non-timber resources that arise from the lack of good knowledge of these resources, and the lack of suitable management guidelines and objectives for them. Management guidelines that specifically address forest cover retention requirements are essential to ensure adequate needs for these resources are maintained. For example, it is critical to know what suitable and capable habitat is, where it is currently located on the landscape, and where recruitment should occur over time to maintain habitat supply on a stable, sustainable basis. This information is a necessary input to the TSR process, which results in a forecast of timber supply based on forest management practices. The results of the timber supply analysis and subsequent AAC determination are negatively influenced by a lack of certainty regarding requirements of non-timber resources.

Relationship to Strategic Resource Plans and Decisions:

Strategic Decisions

Filling the knowledge gap will provide more certainty to the assumptions made in the Timber Supply Review process, and provide a more accurate forecast of timber supply over time. This will enable the chief forester to determine AACs with improved certainty.

Strategic Resource Plans

Filling the knowledge gap will not only benefit the Timber Supply Review process, but will benefit planning processes as well. Implementation of plans will be improved because as better information becomes available, the impacts of applying management practices stemming from that knowledge can be assessed. This assessment will provide decision-makers with an additional tool to enable them to make more informed decisions regarding the approval/disapproval of land use objectives and strategies.

Detail the timing of upcoming strategic decisions and/or planning efforts.

The Regional Landscape Unit Planning Strategy has been approved. Districts are at various stages of analysis and preparatory work to establish landscape unit objectives.

Bulkley – LRMP approved Mar 1998. The monitoring committee will provide recommendations implementation to the Prince Rupert IAMC by the end of 2001; TSR will be complete Nov 2001.

Kispiox – LRMP completed Apr 1996. First annual monitoring report will be released early 2001; TSR will be complete Dec 2001.

Cranberry – No land use plans underway; TSR completed May 1998.

North Coast – LRMP will be completed 2003; TSR completed October 2000.

Morice – LRMP to start when others complete & funding is available; TSR due Dec 2001.

Cassiar Iskut-Stikine – LRMP completed October 2000, Higher Level Plan completed July 2001; Cassiar TSR to be complete October 2001.

Kalum – LRMP completed April 2001; TSR completed November 1999.

Lakes – LRMP completed May 2000; TSR to be completed July 2001.
Queen Charlotte Islands - Technical background report released Spring 2000;TSR due 2001.
Atlin-Taku – No plans underway; Cassiar TSR to be completed October 2001.
Dease-Liard – Dease-Liard Area Assessment underway; Cassiar TSR to be completed Oct 2001.
Nass – No plans underway; TSR to be completed October 2001.

Cross Reference to Management Unit Issues (if applicable):
Issues underlined are those deemed high priorities by the districts. Issues in bold are existing projects.

4.3.3.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
The knowledge strategy is based on both the use/adaptation of existing information (i.e. developing management objectives from wildlife habitat maps) and collection of new information (i.e. updated forest cover maps).

Status of Existing Knowledge:
This issue is very broad in nature, as it relates to multiple forest resources for multiple timber supply areas, each of which has varying degrees of existing knowledge and requirements to address this issue. Therefore, this section cannot be answered in a regional context.

Required Knowledge-Building Activities in these Areas (as applicable):
This strategy is comprised of the following activities:

i. Organization: Districts will review the chief forester's implementation instructions (as documented in AAC Rationales) for subsequent timber supply reviews.
ii. Resource Inventory: Forest resource inventories will be undertaken where the chief forester has identified them in the AAC Rationale as an area where additional knowledge or improvement is required. This will vary by TSA. Examples include predictive ecosystem mapping, vegetation resource inventories, and ungulate winter range mapping.
iii. Research: Where research is required, projects will be forwarded to the research program for future consideration.

Define Performance Indicators, Targets & Milestones:
Projects will be completed in time to support the next timber supply review process for each TSA.

Relationship to Other SSFM Knowledge Strategies (if applicable):
This strategy is closely inter-related with other Knowledge Strategies, which more specifically address the acquisition of improved inventories of forest resources.

Cross Reference to Management Unit Activities: La3, La4, Mo5, Mo15, MoA, MoC, Bu8, Bu9, Ka1, Ka2, KaA, NC1, NC3, NC5, NC10.

4.3.3.3 Description of Activities

Lakes Forest District

SSFM Issue #: 1.32 (1.21, 2.11)	**Activity: Vegetation Resource Inventory**	**Activity #: La3**

Summary:
Approximately 2/3 of the Lakes District remains to be upgraded to VRI.

1. Photo-interpretation--a retrofit of existing linework using 2001, 1:30 000 colour photography
2. Ground Sampling--used to adjust photointerpreted values as necessary
3. Net Volume Adjustment Factors--used to establish actual net merchantable volumes
4. Intensive sampling--assess interpreter consistency

Status:
1/3 existing in Babine Forest Products chart Area. 2/3 new over remainder of the Lakes District.

Objectives:
Retaining appropriate attributes in OGMAs, FENs and riparian areas are important to the LRMP implementation strategy, TSR3 and Landscape Unit Planning initiatives. As we begin to manage for biodiversity, old growth (OGMAs) riparian areas, and other values we need to collect additional attributes. VRI is a standardized provincial data base capable of carrying many of these additional attributes.

Biodiversity will be more effectively managed through the collection of VRI attributes including shrubs and herb plant lists for species diversity, district totals of coarse woody debris, soil moisture and nutrient regimes, stumps, basal area, number of stems/ha and potential wildlife trees.

This move to VRI comes at an ideal time as we can also capture our Mountain Pine Beetle (MPB) epidemic. Approximately 200 000 ha of dead trees must be re-inventoried to update the files and to prepare for Timber Supply Review III (TSRIII). VRI also provides basal area, an important attribute for beetle hazard mapping.

VRI is also related to the following SSFM issues: 1.21, 2.11

1. The VRI is a base inventory that improves existing timber inventory as well as collects many new attributes.
2. Improve the quality of strategic and operational planning
3. Reduce the need for isolated ad-hoc inventories which are expensive and have no place to reside such as our problem forest types (PFT)

Tasks, Deliverables, Targets and Milestones:
i. Specific products and expected outcomes.
VRI, softcopy retrofit in TRIM II bases, current to 2002. 2001 orthophotos and stereo models for Development Planning and Engineering.
ii. Completion dates.
1:30 000 colour imagery must be flown in summer 2001
stratification can begin in the fall of 2001 upon delivery of the stereo models to the contractor.
Ground sampling should begin in early summer of 2002.

Cost Sharing: Babine Forest Products (BFP), Fraser Lake Sawmills (FLSM)

Partnerships: Babine Forest Products (BFP), Fraser Lake Sawmills (FLSM)

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
1,500,000	2	600,000	600,000	Phase II	Phase II		2,700,000	6

SSFM Issue #: 1.32 **(1.21, 2.11, 2.21)**	**Activity: PEM/TEM**	**Activity #: La4**

Summary:

i. overview of tasks

- Obtain Biogeoclimatic Unit Map; TRIM Digital Elevation Model; Modified Bioterrain describing SMR,SNR, and landform attribute's and Vegetation Resource Inventory (VRI).
- Create a GIS overlay.
- Generate resultant spatial and attribute data.
- Manipulate and analyse the attribute database to create a PEM digital attribute database.
- Create a labelled Ecosystem Map with associated database.

ii. overview of geographic area covered (i.e., management units, entire region)

- Lakes District, 1.12 million hectares.

Status: This is an existing strategy

Objectives:

One of the high priority regional issues for the Lakes FD is to ensure that Landscape Units retain Their representative biological attributes in riparian, Old Growth Management Areas (OGMAs), FENs, sensitive areas (Issue 1.21)

This activity is also clearly inter-related to Lakes SSFM issues, 1.32, 2.11, and 2.21.

Lakes is not able to spatially map the ecosystem networks required by higher level plans and operational processes. We cannot identify whether or not the current ecosystem network accurately indicates the needs of habitat and the range of biodiversity.

In order to address these question, we first must acquire an ecosystem map that defines sites series. Once site series is determined the attributes that are available now and in the future can also be modelled. Ecosystem mapping through PEM provides estimates of the likelihood of site series by percent ie: SBS mc2 (70%) and are sometimes referred to as strategic planning maps. PEM/TEM mapping verifies and modifies BEC with bioterrain mapping and provides an operational as well as a strategic tool.

Once PEM/TEM is in place then further modelling exercises can be determined for improved integrated resource management planning, site-specific silviculture and resource management interpretation, wildlife habitat mapping and site productivity mapping.

Lakes has an approved LRMP. It is important to monitor the LRMP as required in Chapters 3.1 General Resource Management objectives, 3.4 Environmental Direction, 4.1 Resource Management Zones, 5.3 Environmental Resource Analysis and Chapter 6, Plan Management and Administration.

Lakes Landscape Unit Planning (LUPs) must ensure appropriate attributes in OGMAs, FENS and riparian areas. Habitat requirements for Caribou and Grizzly Bear as per section 2.4.3 and appendix A-1 of TSR II must be further refined in preparation for TSR III

PEM/TEM is related to SSFM issues 1.21;1.32;2.11;2.21

Tasks, Deliverables, Targets and Milestones:

i. Specific products and expected outcomes.

The PEM/TEM product is a labelled ecosystem map with an attribute database. The knowledge gaps eliminated will result in the ability to complete planning and analysis as indicated in the above section.

ii. Completion dates.

Starting date is ideally tied to VRI completion date. Assuming 2003 as VRI completion, the PEM/TEM would be completed in 2006, 3 years

Cost Sharing: Fraser Lake Sawmill (FLSM) Babine Forest Products (BFP), Canfor Forest Products

Partnerships: FRBC MYA funding.

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
N/A	0		500,000	300,000	200,000		1,000,000	3

Morice Forest District

SSFM Issue #: 1.32 (1.21)	**Activity: Telkwa Caribou Recovery Project**	**Activity #: MO5**

Summary:
Describe in overview the scope and implementation plans.

i. Collection of field data to identify caribou habitat, develop sustainable management strategies and predictive tools.
ii. Morice, Lakes and Bulkley

Status: Existing

Objectives:
One of the high priority Regional issues for the Morice is to identify existing and potential habitat to ensure that the identified wildlife species can be managed sustainably. At this time, there is uncertainty in the Morice around identifying and managing for Caribou habitat and there are no management strategies in place at this time to ensure that Caribou populations will be managed sustainably in the Morice.

Caribou are a fine filter species. Identification of existing and potential habitat and degree of use will provide valuable information to understand how to manage a sustainable caribou population. There is a need to develop management strategies to ensure and or restore 3 caribou populations. This information would be used to apply and then test management strategies to manage caribou.

Currently TSR does not address timber constraints for managing caribou habitat. Caribou have been identified as an important value during the IFPA process. Licensees, MoF and MELP have identified the lack of caribou habitat information as a significant gap in knowledge. Conservation and enhancement of sustainable populations cannot be done without understanding of habitat range and population dynamics.

To continue field data collection to develop management strategies and predictive tools to ensure sustainable management of population. The data collection will tie into the Caribou modelling project in the Lakes to identify potential habitat and ensure sustainable management of populations.

Tasks, Deliverables, Targets and Milestones:

i. Identification of existing and potential Caribou habitat will assist the development of predictive tools and management strategies to ensure the sustainable management of the 3 Caribou populations.
ii. Completion of project fiscal 2004-5.

Cost Sharing:
Primarily Funded by MYA holders in Bulkley. May need to discuss and review with Morice MYA holders.

Partnerships:
This project will tie into the Lakes data to identify potential habitat and ensure sustainable management of populations. Information and management strategies will be shared between districts, agencies, licensee and First Nations. Partners will discuss the future viability of this project with Lakes MYA holders.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
250,000	4	60,000 (Bulkley)	50,000 (Bulkley)	50,000 (Bulkley)			410,000 (Bulkley)	7

SSFM Issue #: 1.32 **(1.21, 2.11)**	**Activity: Orthophotos**	**Activity #: MO15**

Summary:

i. Use of orthophotos to improve Forest Cover attributes, improvement of vegetation resource inventory data collection, link to FC update process and improvement of quality of operational plans.
ii. Morice

Status: Existing

Objectives:
Acquisition of digitally corrected air photos provides licensees and government agency staff with a tool to visually check the accuracy of forest cover attributes, spatial location and sizes of blocks, justify road and block locations and can be overlaid with other inventory layers to create new resultants valuable for operational and strategic planning needs.

Orthophotos will provide a significant increase in the quality and improvement of the forest cover inventory and links with VRI, submission of field information related to the submission of operational plans and improved information to ground test PEM. Additionally, some other improvements include; internal MoF update of changes to the Forest cover, selection of OGMAs as part of the LU planning process.

Describe Tasks, Deliverables, Targets and Milestones:

i. Production of the digital and soft copy products.
ii. 2002-3.

Cost Sharing: Funding from MYA holders

Partnerships:
Digital and soft copy products will be shared between licensees, agencies and First Nations.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
300,000	1	50,000					350,000	2

SSFM Issue #: 1.32 **(1.21, 2.11)**	**Activity: Vegetation Resources Inventory**	**Activity #: MoA**

Summary:
- i. Update 33 mapsheets in the district prior to initiating a VRI project for the district
- ii. Morice

Status: New

Objectives:
VRI will provide detailed stand level information that include the existing timbered stand and site level information, providing improved Site Index estimates, site series assessments which can link with PEM which will also improve the quality of information represented in the forest cover layer.

An important objective is to improve the quality of Forest Cover Data for the Morice. Improved forest cover data can support a number of different projects such as update, improved accuracy for TSR purposes, improved forest cover inventory for ground truthing for PEM, improved inventory data for IFPA and LRMP uses, improved forest cover which is used to identity OGMAs as part of LU planning.

Another important objective is to link VRI work in Morice with similar work done in Lakes and Vanderhoof

Tasks, Deliverables, Targets and Milestones:
- i. A completed VRI for the Morice.
- ii. Fiscal 2006-7.

Cost Sharing: Funded by MYA holders

Partnerships: A VRI inventory will be shared between licensees, agencies and First Nations.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
0	0	400,000	400,000	400,000	400,000	400,000	2,000,000	5

SSFM Issue #: 1.32 **(1.23, 3.11, 3.13)**	**Activity: Watershed Assessments**	**Activity #: MoC**

Summary:

i. Complete a Watershed Analysis for the Morice district's watersheds. The new version of WAP is based on GIS generated information and on the interpretations/analysis of a hydrologist. New aspects include sediment source mapping and stream channel descriptions

ii. Morice District

Status: New

Objectives:

For a number of watershed, ECAs > 30% are being reported. This number is a red flag to identify potential hydrologic impacts to stream banks. The increase in ECA is partly in response to harvest blocks being proposed due to forest health (bark beetles) resulting in the spatial location, size (a number of existing and proposed blocks are joining up) and rate/timing of harvest. All these factors have an unknown impact with respect to hydrologic impacts to streambank stability, down stream impacts to fish, rate and distribution of harvest blocks impact to timing of runoff and impact to temperature sensitive streams (where identified).

Tasks, Deliverables, Targets and Milestones:

The GIS approach would provide the following:

- Summary of current watershed condition with regards to clearcut equivalent (including H60 data), road density in addition to land use summaries (crown, private, operable), road stream crossings, roads within 100 meters of streams, riparian logging (including fish bearing stream portions), and incorporate the terrain stability mapping or ESAs.
- This data could be used to generate the 1995 WAP hazard indicators.
- This information could be used to update the watershed summaries we used several years ago when we prioritized watersheds for WAPs.

The information could be used to identify the need for the more detailed WAP's and would be used by the hydrologist (thus reducing costs).

March 31, 2002.

Cost Sharing:

At the present time, funding is not an issue because the GIS information is now in the Northwest Data Centre.

Partnerships:

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	

Bulkley-Cassiar Forest District

SSFM Issue #:1.32	**Activity: Terrain Stability Mapping**	**Activity #: Bu8**

Summary:
To provide information that may alleviate current downward pressure on the TSA based on the utilization of ESA inventory information from the forest cover database as opposed to accurate terrain mapping. This information can be used to support the following: Spatial modelling, analysis, wildlife habitat supply, rare and endangered ecosystems, site productivity, etc. supporting LU, TSA, LRMP planning, TSR, and sustainable forest management.
i. Explore the unstable terrain area netdowns utilized for TSRs by completing Level 'C' terrain stability mapping on areas within the Bulkley TSA that have contiguous units (15,000ha's or greater) with at least 15% of the area having a high potential for landslide or erosion potential.
ii. The entire Bulkley TSA will be covered. (It is probable that the final phase of this process will use a computer model (i.e. SINMAP) to complete the remaining portions of the TSA.

Status: Existing.
The Bulkley TSA has invested in this activity for the 5 previous fiscal years.

Objectives:
Obtaining complete and integral inventories supporting TSR requirements is of high importance to the region and Bulkley (Issue 1.32).

This activity is clearly inter-related to SSFM 3.12 and is expressed in Bulkley priority issues Bu8 and Bu11.

Specifically the Bulkley requires a baseline terrain stability inventory on contiguous units (15,000 ha or greater) with at least 15% of the area having high potential for landslide or erosion potential.

Once this inventory is complete, the Bulkley will be able to support TSR and other modelling exercises with a clearer understanding of one of the critical constraints on resource management decisions related to harvesting and the operable landbase, habitat and water protection and conservation, and landscape connectivity.

Tasks, Deliverables, Targets and Milestones:
i. Complete Level 'C' terrain stability mapping on significant areas of interest within the TSA.
ii. To be completed by the end of the 2002/2003 fiscal year.

Cost Sharing: Funded by MYA holder PIR (SCI has cost shared in previous years.).

Partnerships: As discussed above.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
338,931	4	70,000	-	-	-	-	400,000	5

SSFM Issue #:1.32	**Activity: Upper Operability Study**	**Activity #: Bu9**

Summary:

To provide a report examining the various dynamics of upper elevation ecosystems and to provide a definitive upper ecological boundary that defines the operable forest landbase within the TSA that can be utilized in future TSRs. This information can be used to support the following: Spatial modeling , analysis, high elevation wildlife habitat supply, rare and endangered ecosystems, site productivity, landscape connectivity, etc. supporting LU, TSA, LRMP planning, TSR , and sustainable forest management.

i. Explore the upper biological limits to the forest landbase within the Bulkley TSA while considering links to Forest Health (BBB) and BIG BEC mapping models currently being utilized. Upper Operability boundary will be established based on the application of the methodology developed in the Telkwa Chart.

ii. The entire Bulkley TSA will be covered. (potential to extrapolate this method across other Regions of the Province exists).

Status: Existing.

The Bulkley TSA has invested in this activity for the 3 previous fiscal years.

Objectives:

A high priority regional issue of importance to the Bulkley is the acquisition of complete and integral inventories essential to TSR (Issue 1.32).

The extent and nature of the operable landbase limits or constrains sustainable forest uses and benefits (including fish, water, and timber) important to society and industry as described in other Bulkley SSFM Issues 1.21, 2.21, and 3.12 and expressed in Bulkley priority issues Bu3, Bu7, and Bu9.

One year left in this activity to establish the upper ecologically operable boundary within the Bulkley TSA to improve the forest managers ability to make informed decisions with respect to land use objectives and strategies that may be ecologically or operationally constrained.

Tasks, Deliverables, Targets and Milestones:

i. Complete field sampling within the TSA that may demonstrate varied elevation limits. Complete a final report describing the dynamics of the upper elevations found within the TSA. Assemble a digital line that can be utilized to define the upper operability line for the productive forest landbase within the entire TSA.

ii. To be completed by the end of the 2002/2003 fiscal year.

Cost Sharing: Funded by MYA holder.

Partnerships: N/A.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
136,076	3	30,000	0	0	0	0	166,076	4

Kalum Forest District

SSFM Issue #: 1.32	**Activity: TRIM II**	**Activity #: Ka1**

Summary:
TRIM II provides the necessary opportunity to update TRIM I mapping which in the Kalum District is 10-20 years out of date. TRIM II will enhance the data specifications required for Forest Practices Code compliance.

TRIM II provides the preliminary building block necessary to complete the other priority inventories in a cost effective and quality oriented manor.

The aerial photographs produced by this project will be transferred into 3D model files which will allow:

- VRI Forest Cover typing.
- PEM and terrain classification and mapping necessary for the implementation of higher level plans and the Kalum LRMP.
- Easy import of digital info onto orthophotos for viewing and printing (i.e. softcopy for 3D viewing).
- Easy merging of base mapping and forest cover mapping.
- No need for expensive satellite image analysis, mapping can be done in house.
- Data exchange between stakeholders can be exported and imported electronically

This project covers the entire Kalum Forest District in and Nisga'a Land.

Status: Existing

Objectives:
This project will enable the three line ministries, licensees and the Nisga'a Lisims Government to update their resource inventories.

Tasks, Deliverables, Targets and Milestones:

Stage I - Aerial photo coverage
Where: Entire TSA including Nisga'a Core Lands
When: June 30 - Sept 15, 2001
Partners: All stakeholders (Kalum Planning Team) and the Nisga'a. Other users include Regional Districts, Municipalities, and City Planners.
Estimated costs: **$150,000. Nisga'a would be responsible for costs within Core Lands of approx. $20,000 of this total.
Funding: FRBC-Nisga'a as required.
* SCI has secured a contractor for the 2001 operating window.
** All costs are estimates. Estimates will be refined during tendering phase for all projects listed.

Stage II - Production of Orthophotos/includes aerial triangulation and scanning
Where: As per Stage I
When: Sept 16, 2001 - Feb, 2002
Partners: As per Stage I
Estimated costs: **$200,000, Nisga'a would be responsible for costs within Core Lands of approx. $25,000 of this total.
Funding: FRBC - Nisga'a as required.

Stage III - Development of TRIM II base
Where: As per Stage I
When: Jan. 2002 - Mar 2003
Partners: As per Stage I
Estimated costs: **An interagency and licensee review would determine total number of mapsheets requiring Trim II base. Preliminary estimates are 200 mapsheets @ $2000/mapsheet = $400,000 over two years. $40,000 of this is expected from the Nisga'a Government.
Funding: FRBC

Cost Sharing:

Partnerships:
This is a joint project supported by Skeena Sawmills, Skeena Cellulose, the 3 ministries and the Nisga'a Lisims Government.

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
150,000	1	300,000					300,000	1

SSFM Issue #: 1.32 (1.21, 2.21, 5.11)	**Activity: Grizzly Bear Habitat Ungulate Winter Range Pine Mushroom Capability Hardwood Management Red & Blue Listed Plant Communities**	**Activity #: Ka2**

Summary:
Grizzly Bear Habitat: Strategic planning in the North Kalum requires ground assessments of critical habitat areas based on existing 1:250,000 capability mapping.

Ungulate Winter range: Strategic Planning in the North Kalum requires Mountain Goat winter range mapping using existing data layers with aerial validation. Existing Moose winter range mapping for portions of the District need expansion for the entire District.

Pine Mushroom Capability: A capability mapping layer needs to be developed and field validated for the entire planning area.

Hardwood Management: Hardwoods hold significant economic potential, but also grow best in areas where harvesting would frequently be in conflict with Ungulate Winter Range, critical habitats for some listed species (e.g., fisher) and in the likely locations of many red and blue listed plant communities. A strategy for hardwood management needs to be developed.

Red & Blue Listed Plant Communities: Capability mapping for these communities needs to be undertaken for the entire planning area, with ground truthing.

Status:
Grizzly Bear: Existing (i.e. there has been past FRBC investment, though not ongoing)
UWR: Exiting (i.e. there has been past FRBC investment, though not ongoing)
Mushroom: New
Hardwood Management: New
Red & Blue Plant Communities: New

Objectives:
G. Bear: Identify critical habitats for strategic land use planning.

UWR: Identify critical UWR for removal from THLB.

Mushroom: Develop capability map for directing forest harvesting and other activities in the light of sustaining a mushroom harvest.

Hardwood: Develop a strategy for managing hardwoods.

R&B species: Identify locations of plant communities at risk.
Other high priority issues addressed by this activity include: 1.21, 2.21 & 5.11.

Tasks, Deliverables, Targets and Milestones:
G. Bear: To use existing g. bear capability and suitability mapping, and air photos, to identify critical habitats (small landscapes), and ground truth these with respect to grizzly bear use and habitat conditions (Deliver a map layer or critical habitats, with report. Could be done in one year, but would best take two. Timeline – necessary for input to North Kalum LRMP).

UWR: Goat: To use existing map algorithms, and existing map layers for the Nass Ranges and South Kalum LRMP, and Kispiox LRMP implementation, to refine a suitability map layer for the North Kalum Planning Area. To field validate this map layer with aerial surveys (Feb/Mar). (Deliver a map of Goat Winter Range, with report. Could be done in one year. Timeline – desirable by December 2002 for FPC regs, and also for input to North Kalum LRMP).

Moose: To synthesize existing Moose winter range mapping from South Kalum LRMP, Nass valley, etc. to produce a sufficient District wide layer (Deliver a synthetic map or combination of maps (geographically). Could be done in one year. Timeline by December 2002 for FPC regs).

Mushroom: To use existing knowledge of mushroom distribution and growing potential to develop a capability map layer, and field check this map. (Deliver a map with report. Could be done in 2 years. Timeline: asap)

Hardwood Mgmt: To synthesize existing information on the distribution, site potential, harvest mechanics, economic returns and genetic structure of hardwood lineages, along with the distribution of critical wildlife habitats in hardwood stands, and locations of red and blue listed plant communities, in developing a management strategy for hardwoods. (Deliver a report. Could be done in one year. Timeline: asap)

Red and Blue Plant Communities: To use existing map algorithms to produce a map of the probability of locations of listed plant communities, and field check a sample of these to map exact locations and describe the communities. (Deliver a set of map layers with report. Would require two years work. Timeline: asap).

Cost Sharing:
No cost sharing arrangements exist for these projects. Efficiencies in each one will be gained from existing mapping or info derived from recent LRMP (South Kalum) or adjacent Districts.

Partnerships:
No partnership planning exists. Partnerships could be developed among licensees, and among government agencies, licensees and First Nations groups (e.g. Nisga'a Lisims Government)

Investment to date		**Investment Required**						**Total Years to complete**
$$	Yrs	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
Bear 75,000	3	30,000	30,000				135,000	5
Goat WR 75,000	3	35,000					110,000	4
Moose WR 0	0	20,000					20,000	1
Mushroom 0	0	15,000	25,000				40,000	2
Hardwood 0	0	25,000	30,000				55,000	2
Red & Blue Plant 0	0	25,000	40,000				65,000	2

SSFM Issue #: 1.32 (2.11, 2.21)	**Activity: Predictive Ecosystem Mapping (First Approximation)**	**Activity #: Ka2**

Summary:
PEM is a method of predicting ecosystem occurrence on the landscape given basic inventory information and expert knowledge. EcoGen is a PEM model developed by MoF. FRBC has funded the development of this model over the past three years. It has been successfully applied to the many areas in this Region. EcoGen can provide spatial ecological data and relationships required to do:

- Land management planning

-identify important habitats (e.g., capability/suitability mapping, rare ecosystems)
-model management effects on habitat
-plan reserve areas (e.g., OGMAs, FENs)

- Yield analysis

-link with SIBEC site index estimates
-evaluate regional level forest productivity

Status: Existing.

Objectives:
PEM provides the basis for planning on an ecologically sustainable basis.
Other high priority issues addressed by this activity include: 2.21 & 2.11.

Tasks, Deliverables, Targets and Milestones:

- **Stage I**

Field data collection to develop knowledge tables & prepare baseline info for final mapping. MoF (Region) will provide the technical & administrative support to complete this stage. Knowledge tables will be developed for every subzone in the Kalum TSA.
In addition, a reliability data set will be developed to test the knowledge tables once completed. This will provide MoF & Licensees with fairly reliable info on the suitability and applicability of the knowledge for Stage II of the project (features programming and final mapping).

Where: Entire TSA
When : June 2001 - March, 2002
Partners: All stakeholders
Admin. by: MoF, Prince Rupert Forest Region
Contact: Bobby Love
Estimated costs: **$130,000 to develop knowledge tables for seven subzones.
Funding: FRBC - MoF staff time and support services.

- Stage II

Stage two of the PEM project will occur in the 2002-2003 fiscal. It will entail features programming/extraction that will be combined with the knowledge tables (see stage I) and run through EcoGen.
In addition to the analytical component of stage II an accuracy assessment using the VRI (phase II) protocol will be undertaken. Using the PPSWR (probability proportional to size with replacement) sampling technique an unspecified number of randomly located field samples will be established. These samples will be used to provide a statistical statement of the accuracy of the PEM mapping. The results of this test would then be used as a basis for undertaking a 2nd approximation. Of course a 2nd approximation would only proceed after a cost/benefit analysis and would be subject to FRBC approval.

- Stage II – Final Mapping

Where: As per Stage I
When: April 2002 - Mar 2003
Partners: As per Stage I
Admin. by: MoF, Prince Rupert Forest Region
Estimated costs: **$60,000 for analytical support and $90,000 for accuracy assessment
Funding: FRBC - MoF staff time and support services.

Cost Sharing:
Licensees in the Kalum TSA, MoF will provide technical & administrative support for stage II of the project. MoF analyst will produce final PEM map & attribute file.

Partnerships: SCI, Skeena Sawmills, line ministries.

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		180,000					180,000	1

SSFM Issue #: 1.32 **(1.21, 2.11)**	**Activity: Vegetation Resource Inventory (VRI)**	**Activity #: KaA**

Summary:
VRI is a process for assessing the quantity and quality of BC's timber and other vegetation resources. The last forest inventory was the Unit Surveys completed in 1976. Since then, periodic re-inventories have been conducted on an as-needed basis.
Kalum, as identified by MoF Regional Inventory Specialists, is FD with the highest regional needs for this inventory. Therefore Regional dollars will be used to complete this project. Professional staff time and support services will also be included to ensure project objectives are achieved.

Status: Existing

Objectives:
Other high priority issues addressed by this activity include: 1.21 & 2.11.

Tasks, Deliverables, Targets and Milestones:

- Stage I - Phase I and II of VRI on eleven mapsheets (utilizing existing map base).
  - Where: North-eastern portion or TSA *.
  - When: April 1, 2001 - March, 2002
  - Partners: All stakeholders

Estimated costs: **$275,000 (project will be competed in year one or two).
Funding: FRBC/MoF staff time and support. #1 funding priority for available regional dollars.
* This is the only area within the TSA with orthophotos.

- Stage II Phase I VRI - Kalum TSA (utilizing TRIM 2 photography)
  - Where: 30 mapsheets of highest priority in Kalum TSA for each year.
  - When: Apr 2002 - Mar 2005
  - Partners: All stakeholders
  - Estimated Cost: $270,000 per year for three years.

Funding: FRBC/MoF staff time and support. #1 funding priority for available regional dollars.

Cost Sharing: Photos were produced during the TRIM II project in Prince George. MoF (Region) paid $10000 for ortho development.

Partnerships:

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		275,000					275,000	1

North Coast Forest District

SSFM Issue #:1.32	**Activity: HyP3--Low Productivity Harvest Potential**	**Activity #: NC01**

Summary:
The purpose of this project is to establish the feasibility and management objective behind harvesting potential on low productivity site currently outside of the operable landbase. To address this issue, an operation research trial was initiated in 1997 which has focused and will continue to address the following objectives:

- Assess feasibility of managing lower productivity cedar/hemlock forests on outer coast for timber/fibre production.
- Define the extent of these sites to be able to readily identify the potentially operable portion.
- Develop ecologically based management guidelines for these forests.
- Document ecology of blanket bog/upland forest complex of north coastal BC.
- The operational trial (TSL A60047), is located near Oona River, 40 km south of Prince Rupert.

Status:
The Research Trial is in its 5 year. The past 3 years have been funded by FRBC. Research completion date is expected to be in 2005.

Objectives:
Hyp^3 is an integrated research project initiated to address the Chief forester's request for info to base an expansion of the operable landbase for the North Coast FD. This would target the lower productivity cedar – hemlock stands that cover some 235,000 ha or 12% of the North Coast TSA.

Tasks, Deliverables, Targets and Milestones:

Oona River Site Prep

Excavator site treatments will be carried out in the spring of 2001. The overall objective of the excavator site treatments at the Oona River trial will be to create four types of seedling microsites throughout the blocks:

- Elevated mounds of mixed organic/mineral material;
- Mixed but unmounded microsites;
- Surface scarified microsites; and
- Microsites with minimal disturbance resulting from logging and yarding activities (control).

Oona River Regeneration

Monitor both natural & planted regeneration within the site treatment plots; assess seedling establishment & growth in relation to substrate type, proximity of seed trees/stand edges, deer browsing & vegetation competition. Plant redcedar & cypress in spring 2001. The efficiency of seedling protectors currently on the market will be assessed in the Oona R. cutblocks.

Assessment of Growth History, Productivity, and Wood Quality

Processing the 37 sample trees (stem analysis) has been to reconstruct the growth history of trees in the old growth 01 site series. This data will be compared to growth studies in 2nd growth stands. Results will be used to refine productivity (site index) & rotation length for the sites.

Cost Sharing: MYA holders provide the funding and MoF provides staff and expertise.

Partnerships:
The Smithers Regional Research team lead by Allen Banner together with Davide Cuzner of the North Coast Forest District are committed to the completion of this research project.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
193,270	5	26,500	39,200	22,300			88,000	8

SSFM Issue #: 1.32	**Activity: Riparian Classification Inventory (RCI)**	**Activity #: NC03**

Summary:
The purpose of this project is to complete a riparian classification inventory within the operable landbase for the North Coast Timber Supply Area (TSA).

Status: The Project is in Year 1 of the proposed 3 year project.

Objectives:
The objective of this proposal is to complete an inventory of inventories of the existing fish stream classifications on streams located within the operable land base. Watershed boundaries will be used as a grouping method to organize and gather the stream information. In almost each watershed there will be a lack of complete fish stream classification to cover the watershed's operable landbase. This will be determined through a gap analysis.

Tasks, Deliverables, Targets and Milestones:
A gap analysis will be completed for each watershed. The analysis will report by area the outstanding locations in which fish stream classification is needed. Once the gap analysis has been completed for 32 of the major watersheds in the TSA, its results will be presented to all Licensees at the most convenient TSA Steering Committee. Licensees will be given 14 days to submit the order in which they would like watersheds to be classified. A consultant will be hired to classify the outstanding streams in the order in which Licensees and MoF have agreed to. Once the outstanding fish streams have been classified, Riparian Reserve Zones (RRZs) will be applied to the operable landbase so that net losses to the Timber Harvesting Landbase (THLB) can be calculated for each watershed

All field work is expected to be completed by November 2002.

Cost Sharing:
MoF will be responsible for providing one (1) full time employee to carry out the project management and ensuring that the project specifications are met. The MYA holder will provide the funding amount as per agreed upon terms.

Partnerships:
Partnerships and commitments will be designated once funding approval has been established.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
44,200	2	58,200	61,200				119,400	3

SSFM Issue #: 1.32	**Activity: Vegetative Resource Inventory (VRI)**	**Activity #: NC05**

Summary:
The current forest inventory is dated and the need for detailed forest attributes is critical for addressing issues such as timber supply, wildlife habitat and biological richness. Refinement to both mature and second growth forest attribute information is needed to address issues not considered when the original inventory was completed..

i. overview of tasks: complete a new inventory to Vegetative Resource Inventory standards
ii. overview of geographic area covered (i.e., management units, entire region): TFL 25, Block 5

Status:
Preliminary office work has been completed. Airphotos have been scanned to integrate into Softcopy software program for inventory updates.

Objectives:
To provide reliable resource inventory information used for TSR determinations and to support land and resource management decisions.

Tasks, Deliverables, Targets and Milestones:
Complete VRI by 2005.

Cost Sharing:

Partnerships: Western Forest Products Ltd.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
60,000	1	180,000	200,000	200,000			640,000	4

SSFM Issue #: 1.32	**Activity: Inventory of Forest Cover**	**Activity #: NC 10**

Summary:
To study the accuracy of forest cover information in hopes to improve the information that will be used for analysis in the North Coast LRMP.

This study will cover productive forest types in the North Coast TSA.

Status: New
This is a new project that will re-inventory the forest cover for the North Coast.

Objectives:
- Update the forest cover information to reflect current conditions and improve upon inaccuracies that exist due to technological change in our understanding of forest management.
- Provide all planning sectors with current and reasonably accurate forest cover data.

Tasks, Deliverables, Targets and Milestones:
- Forest cover is relied upon for nearly every forest management activity including wildlife habitat studies. Therefore, a re-inventory of the forestry land base will increase the certainty in all aspects of forest management.
- Random sample timber types and collect pertinent data regarding all forest cover attributes.
- Provide a report that can be used for TSR 3 and by the LRMP.

Cost Sharing:

Partnerships:

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		$60,000					60,000	1

4.3.4 Issue 1.33--How can we access existing information and technology transfer to share information resources as broadly as possible at reasonable cost?

4.3.4.1 Description of Issue

Overview Description of the Regional Strategic Issue:
Huge quantities of data have been collected by Ministries as part of their mandate, by licensees through the FRBC funded programs , by NGOs and First Nations. This information is in various formats and standards depending on who collected it and for what purpose.

There is an increasing need for all groups interested in land management to share information rather than recreate it. Ultimately all information has to be in digital format and to agreed to, common data standards.

This issue has several components. They include, but are not limited to:

1) What existing information exists, in what form and where is it located?
2) Who "owns" the information and how can the cost of acquisition be best reconciled?
3) How best can we disseminate this knowledge?
4) How do promote open access to information while government still has a "cost recovery" policy for certain baseline data e.g. TRIM
5) What are the strategies we can undertake to share information with short term results?
6) What are the strategies we can support with longer term results?
7) What is within the scope of a regional project vs. provincial?

We must recognize the value of best available information even if it does not meet current "standards".

Relationship to Sustainable Forest Management:
With shared common information every agency and group has better ability to create knowledge and therefore better decisions are made with less risk around all land use decisions. Common information creates common understanding and focuses argument around decisions themselves not on whether the "correct" piece of information was used.

Shared information reduces costs for all users and therefore allows interests that may not previously have been able to enter the decision process to take part.

Relationship to Strategic Resource Plans and Decisions:
Considerable effort is wasted by all agencies and groups in reproducing, storing managing, searching for and retrieving information.

Timber supply review analysis and land use planning has been greatly improved by using shared spatial digital information to a common standard. Use of this information has allowed for a more informed public review process and therefore improved buy in from all stakeholders. It is anticipated that this efficiency will increase as more and more data is available in a common format direct from custodians.

Cross Reference to Management Unit Issues (if applicable):

4.3.4.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
The strategy to address this issue in Prince Rupert Forest Region focuses on effective use of existing information.

Status of Existing Knowledge:

- North West Data Centre co-operative data warehouse for spatial and attribute data in Prince Rupert Forest Region and Skeena MELP region.
- North West Data Centre web page
- North West Data Centre and Canfor (Houston) cooperative data sharing project (Barry Watson and Don Morgan) contract to examine "how to" in 2001-2002
- Southern Interior Forest Research Partnership (SIFERP);
- IFPA (Lakes-Morice) have raised this issue and may be developing some strategies For the IFPA which build on the Canfor NW Data Centre initiative ;
- Forest Resources Inventory Committee (FRIC);
- National Forest Information System (contact Dave Gilbert)

Forest Information Update web page (http://home.att.net/~gklund/)

- Access to Ministry of Forests' information through the Internet: using ArcIMS;
- Corporate Resource Management Data Warehouse;
- BC Fisheries project registry (http://www.canbcfpr.pac.dfo-mpo.gc.ca/fpr/Qf_Welcome_dev.asp);

Kalum Forest District Inventory of Inventories Access database – needs work to be useful.

Required Knowledge-Building Activities in these Areas (as applicable):
Organization, Synthesis, Analysis:
Continue the project to access information from custodian warehouses directly.

Determine:

- the standards required to take part in formal information sharing,
- the technology required to take part in formal information sharing.

Purchase any necessary technology for a pilot project.

Implement pilot project.

Define Performance Indicators, Targets & Milestones:
Successful implementation of a pilot project by 2004

Relationship to Other SSFM Knowledge Strategies (if applicable):
This applies to all knowledge strategies where information is collected and shared

Cross Reference to Management Unit Activities: Re1.33, Ka7, NC11.

4.3.4.3 Description of Activities

Region

SSFM Issue #: 1.33	**Activity: Inventory of Inventories Data Warehousing**	**Activity #:**

Summary:
Continue cataloguing existing inventory data and making this information available on the NW Data Centre web site.

Continue investigation and pilot project on accessing corporate and NGO data direct from custodial data bases.

This activity includes data from all agency sources for the Skeena/Prince Rupert Region.

Status:
This is an existing activity # 723491

Objectives:
This 2 part activity is the key component of the overall knowledge strategy for addressing part of issue 1.33.

Tasks, Deliverables, Targets and Milestones:

1. A web based catalogue of existing inventories for the topic geographic area. The catalogue includes metadata for all inventories. **Fall 2002**
2. Reports on:

- Existing initiatives to access spatial and non spatial data. **April 2003**
- Existing structures to manage and move data within agencies and corporations. **April 2003**
- Technological and personnel requirements to make formal data management and data sharing a possibility. **April 2003**
- A gap analysis of select NGOs, First Nations and corporations who are open to the concept of a data sharing pilot. April 2004
- A cost breakdown of each component that is required in order for data sharing to take place between the select NGOs, FNs and corporations. **April 2004**
- A pilot for moving data between corporations; NGO and FNs while maintaining corporate and agency data integrity and privacy. **April 2005**
- A report on the pilot after one year identifying how to take the pilot from concept to operational reality. **April 2005**

Cost Sharing:
The government of BC is working on a corporate resource data management warehouse and is investing considerable capital and manpower into this initiative. The North West Data Centre and the Skeena region GIS departments are the flagship of government resource data management and as such has the opportunity and staff talent to move to the next level with corporate and NGO partners.

Partnerships:
No financial partnerships exist. Canfor and the Wet'suwet'en have explored this concept with MoF and are interested moving further with this initiative.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
75,300	1	100,000	100,000	300,000				3

Kalum Forest District

SSFM Issue #: 1.33	**Activity: Operational Trials**	**Activity #: Ka 7**

Summary:
There is no central data warehousing of these sites and trials.

Status: Existing.

Objectives:
Ensure trial data and sites are not lost or destroyed.

Tasks, Deliverables, Targets and Milestones:
Develop interagency team to catalogue and digitally map this information.
Arrange data warehousing and custodianship.

Cost Sharing:
All agencies can pool data for storage and joint access.

Partnerships:

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		10,000					10,000	1

North Coast Forest District

SSFM Issue #: 1.33	**Activity: Ecosystem Based Management Pilot Project / Workshop**	**Activity #: NC11**

Summary:
Government has endorsed Ecosystem Based Management (EBM) as method of managing natural resources. This process is endorsed through Higher Level plans and Land Claim agreements with First Nations. Through this process all resource values are considered in developing land use plans. The Public may have confidence in the sustainability of our Natural Resources and Tenure holders are guaranteed access to the raw materials they need. However what exactly ecosystem management is and how it should be applied are unclear. There exist many definitions of what EBM is and there are few practical examples of its implementation.

i. Overview of tasks

- To develop a common knowledge base for the North Coast on What EBM is and how it can be applied.
- Bring together stakeholders and experts in a form such as a workshop or roundtable to develop an ecosystem strategy for the North Coast.
- To implement one or several pilot projects for EBM in the North Coast.

ii. Overview of geographic area covered (i.e., management units, entire region)
The information gathering component of this project will bring together stakeholders from within the entire North Coast District. Also, experts will be invited from other Regions of the Province. The systems and methods developed will be applicable throughout the entire District.
Presently the Git'ga at of Hartley Bay are proposing a Pilot Project within their Traditional Territory to implement EBM. Through the Workshop and the current LRMP process there may be additional pilot projects within the North Coast Forest District proposed.

This project also relates to issues 1.21, 1.23, 2.21, 3.11, 3.12, 3.13 and 5.11.

Status: Existing, New or Off-Strategy
Currently there have not been any EBM plans developed in the North Coast. The Central Coast LRMP has been directed by Government to implement Ecosystem Management into the planning framework. The Government Technical Team for the North Coast is also considering EBM within the framework of the LRMP. Interfor, Western Forest Products, Triumph Timber and the Git'ga gat have are developing an agreement for an EBM pilot project.

Objectives:
The objectives of this project is to:

- Develop a working definition and strategy for EBM within the North Coast Forest District
- Share this information with all stakeholders
- Develop pilot projects for EBM implementation and research.

Tasks, Deliverables, Targets and Milestones:

- Ecosystem Based Management Workshop to develop a working definition and a strategy for implementation of EBM on the North Coast as well as to prioritize research needs. Workshop to be held prior to April 1, 2002. And a written report and recommendations to be completed within two months of the workshop.
- Implement a Pilot Project with research trials based on EBM. This project would be initiated in March 2002, with results reported quarterly. Adaptive management would be used to fine tune management practices based on results and trends. Although this is an ongoing process it is expected to develop and evaluate the results by March of 2004 and to provide a template for expansion of EBM for other areas in the North Coast Forest District.

Cost Sharing:
Initial costs will be covered through the SSFM portion of the RMP.

Partnerships:
Interfor, Triumph Timber, Western Forest Products and the Git'Ga at have acknowledge support for this project.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
0		65,000	20,000	20,000			105,000	3

4.3.5 Issues 2.11 & 2.12--How productive are managed stands in the different ecosystems of the Prince Rupert Forest Region? This issue applies to both clear cut and partial cutting silvicultural systems.

4.3.5.1 Description of Issue

Overview Description of the Regional Strategic Issue:
There is increasing pressure on the land base available for timber production. There is also a desire to use partial cutting systems for objectives other than timber production in areas that are within the timber producing land base. It is imperative that the productivity of sites that are available for timber production is modelled in the most accurate way possible. Errors in the estimation of productivity may have significant effects on the decisions made around allowable cuts and land use that will prove hard or impossible to reverse in the future.

Estimates of site productivity were made based on measurements and models of the original mature trees that were harvested from an area. New methods estimate site productivity from the inherent nutrient and moisture status of a site and yield models for managed stands.

In order to get better estimates of site productivity, we need to have full coverage of ecological mapping; studies that relate tree growth to ecology (SIBEC) and monitoring programs to test our estimates through time.

Relationship to Sustainable Forest Management:
Better information is required to accurately predict the potential productivity of every stand in the province. In addition, we need more information on the realized or "actual" productivity (how our stands actually grow) given the sites productivity and the new "complex" stand structure being developed by partial cutting and/or alternative silvicultural systems in general. A number of tools exist to predict potential and actual site productivity of single storied, single aged stands. As we move into a future of diversity and alternative harvesting to satisfy less-economical forest management, we have to understand the implications on the growth rates of our forest stands.

Better education of the forestry community and public at large of the difference between the potential productivity of our forest lands and the represented productivity (how our trees actually grow).

All land management decisions that impact forestry operations require this information. Many people do not fully comprehend the impacts on tree growth of various alternative silvicultural systems. For instance, if a land-use decision is made that eliminates clearcutting all together, the public must understand the implications of such a decision. Some of the impacts might be; the disturbance of the natural state of some stands (i.e. pure lodgepole pine stands), slower stand growth rates caused by limiting light to understorey, impacts on other native shrub and herbaceous species.

More information is needed that allows better estimates of potential and realized productivity to better define the productive forest. Once collected, the information must be disseminated to land managers land use planning tables to allow better and more informed land use decisions.

Relationship to Strategic Resource Plans and Decisions:

1. Estimates of growth and yield are key to determining allowable annual cut (AAC. AAC is inextricably linked to forest and community stability.
2. Investment decisions in silviculture must be based on knowledge of the outcome of those investments.
3. New, more accurate estimates of site productivity are expected to help to mitigate downward pressures on AAC in many areas of the province.

Cross Reference to Management Unit Issues (if applicable):
Bulkley; Kalum; North Coast and Morice have identified the need for ecological mapping for a variety of reasons. SIBEC studies are identified by North Coast and Kalum. Understanding of site productivity is a

key for the lakes/Morice IFPA.

4.3.5.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
The knowledge strategy for this region uses existing inventories where appropriate to model ecosystems (predictive ecosystem mapping PEM). From this information and studies that relate tree growth (height and age) to ecosystems (SIBEC), improved estimates of the timber volume are obtained.

Improved inventories e.g. VRI can be used as inputs to these models and the VRI ground sampling protocol can be used in a monitoring program to provide statistical reliability to the estimates and a continual monitoring of real growth over time.

Status of Existing Knowledge:
Many of the information, methods or tools needed are identified in the Forest Productivity Council's, Site Productivity Working Group 5 year plan. The plan can be access on the internet at
http://www.for.gov.bc.ca/resinv/G&Y/Projects/spwg/fiveyr.htm

Predictive ecosystem mapping exists, or is in process, for Morice, and North Coast through the HYP3 project. TEM exists for very small units (mapsheets) **PEM is required for all other units in order to achieve ecosystem mapping quickly and cost effectively.**

Non spatial SIBEC studies are available for Bulkley.

SIBEC studies are under way in North Coast.

SIBEC studies should follow in all units once ecosystem mapping is available.

Monitoring programs need to be put in place along with any planned VRI projects in order to evaluate the statistical reliability of PEM and SIBEC and to monitor growth through time. These programs can be put in place prior to any PEM or SIBEC study.

VRI projects are proposed for Lakes, Morice, and Kalum.

Relationship to Other SSFM Knowledge Strategies(if applicable):
This strategy is intimately related to 1.21 and 2.21, which also require PEM.

VRI can be used to improve existing PEM modelling based on forest cover inventories over time or as base line inputs where available.

Cross Reference to Management Unit Activities:
Bulkley PEM, Kalum PEM, VRI and SIBEC; North Coast PEM and SIBEC; Lakes PEM and VRI (most of these projects are listed key for addressing other issues and can be found under those issues).

4.3.5.3 Description of Activities

North Coast Forest District

SSFM Issue #: 2.11	Activity: North Coast PEM	Activity #: NC02

Summary:
In 2000, the initial calibration for 5 mapsheets along the Skeena River corridor was completed by Allen Banner, Del Meidinger and Shamya Consulting. In 2001, the PEM calibration is being modelled for the entire TSA based on the initial field work. The proposed plan for 2002-03 is to test the reliability of the model by establishing random sample plots throughout the TSA.

All works listed are proposed to be completed for the entire TSA.

Status: The project is in Year 2 of the proposed 3 year project.

Objectives:
The objective of the works proposed for 2002-03 is the test of variance and reliability in the PEM model.

Tasks, Deliverables, Targets and Milestones:
The products delivered from this task will include an audit report which will be submitted to the Chief Forester at TSR 3

The audit report is expected to be completed in January of 2003.

Cost Sharing:
MYA holders are expected to provide the funding while the MoF will provide the staff and expertise.

Partnerships:
The Smithers Regional Research Ecologist, Allen Banner, is committed to the completion of this audit report.

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
127,960	2	18,300					18,300	3

SSFM Issue #: 2.11	**Activity: SIBEC 2**	**Activity #: NC06**

Summary:
- Test Site Index for CWH vm zone using SIBEC method. This will determine the accuracy of current growth and yield for the North Coast.
- The area that will be studied will be the CWH vm North of the Nass river in the North Coast TSA.

Status: New

Currently 2/3rds of the North Coast has been inventoried. The area North of the Nass is the remaining portion of the TSA to be completed.

Objectives:
- To identify areas where site index information is lacking.
- Provide better information to determine the growth potential in second growth stands.
- Provide updated info for the landscape unit planning process and for the North Coast LRMP.

Tasks, Deliverables, Targets and Milestones:
- Set up sample plots to determine SI and compare to current forest cover information.
- Develop a report outlining the results and findings.
- Completion by the end of the 2002 field season.

Cost Sharing:

Partnerships:

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		30,000					30,000	1

4.3.6 Issue 2.21--How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?

4.3.6.1 Description of Issue

Overview Description of the Regional Strategic Issue:
This issue focuses on the information gaps and tools required to better conserve viable populations of fine filter species given that we still have a considerable lack of information on many of these organisms.

The Forest Practices Code (FPC), with its various Guidebooks, is designed, in concept, to promote conservation of most forest-dwelling species by coarse filter, ecosystem management. Some species, whose habitat use is very restricted spatially or temporally, or which rely on mature forest conditions, require fine filter management, or management focussed specifically at the individual species. The Identified Wildlife Management Strategy (IWMS) of the FPC provides some guidelines for conserving some of these fine filter species (known as Identified Species). Other land use decisions (strategic and operational) can help. The full complement of Identified species has not been finalized, and the list does not include all blue and red listed (i.e. rare and endangered) species that may be candidates for fine filter management.

Relationship to Sustainable Forest Management:

i. The maintenance of environmental values.

A wide array of Identified and listed species are at risk because of the lack of sufficient information to integrate their demographic and habitat needs into land use planning, and forest management planning.

ii. The sustainable use of timber resources

The sooner habitat needs for these species are integrated into TSR, the less risk there will be to timber supply. Timber supply may be at risk if federal legislation on endangered species requires removal of timber from the AAC in order to sustain a viable population of the species in question. More complete integration of biodiversity conservation considerations within TSR will be met by filling the knowledge gap.

iii. The sustainable use of non-timber resources

Various economic activities including eco-tourism and commercial fur harvesting are somewhat at risk by failure to fully conserve these species in the future.

Relationship to Strategic Resource Plans and Decisions:

Strategic Decisions

Habitat set-asides in WHAs are a necessary constraint on AAC in TSR. Habitat set-asides for other species may have to be incorporated into TSR as mandated by endangered species legislation. Without the data, these become uncertainties in TSR, and lead to potential problems with AAC.

Strategic Resource Plans

Various of the Identified Species are considered directly by LRMP tables, and are given direct land use and management attention within the objectives and strategies of those LRMPs. In general, LRMPs are hampered by insufficient information to do a thorough job in these recommendations. Where existing LRMPs give specific direction, implementation is often hampered by insufficient data.

Upcoming LRMPs are in North Coast and Morice FDs – these could benefit most from inventory information. Implementation of existing LRMPs in Lakes, Bulkley, Kispiox, Iskut-Stikine and South Kalum all could benefit from more detailed inventory and habitat selection data.

Cross Reference to Management Unit Issues (if applicable):

4.3.6.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
This strategy requires the collection of new information, and the better use of existing information. The

relative need differs among species.

The Strategy involves the following necessary steps. These do not have to be attained in sequence; in particular, points iii and iv can be done together, and information can be drawn from other parts of the Province.

(i) Identification of all pertinent species.
(ii) A demographic assessment of the most vulnerable life history stages of each species in the context of forest development. This includes modeling of the sensitivity to changes in various stages, as well as field inventory of survival and productivity of various life stages.
(iii) An assessment of the species' habitat selection during the vulnerable life history stage, and a quantification of the habitat attributes being selected for. This includes an assessment of possible feedback mechanisms between habitat carrying capacity and demographic performance (i.e. food limitation).
(iv) Inventory of distribution of vulnerable, fine filter species in the Region.
(v) Development of forest management practices that ensure sufficient habitat is maintained without compromising the life history/demographic process in that habitat.
(vi) Extension work to inform forest managers and planners of recent new information and how to apply it. This includes the development of habitat suitability, capability and effectiveness maps, based on a habitat map layer.

Status of Existing Knowledge:
This section is organized as per the six steps above.
There is a considerable amount of information available, and most tools (e.g., RIC inventory standards; population viability models) are in place to deliver new work. The following is a quick synopsis:
Identification: The pertinent species have been listed in the IWMS or on the Provincial Red and Blue Lists. These lists drive current priorities. However, the IWMS will produce updated lists in the near future, and additional species will have to be considered (e.g., marten). This Strategy addresses current lists, but the priorities will have to be reviewed periodically.
Vulnerable life history: This can be inferred from existing information on the taxonomy, life history and ecology of the species, and there is often general agreement. However, detailed modelling has not been done in all cases.
Habitat selection: There is some knowledge on habitat use by most of the species, but in many cases this information is too vague to direct forest development. There is a lack of rigorous habitat selection (use vs. availability) work, and there is often poor data on the precise forest habitat attributes being selected by the organisms.
Inventory: The distribution of many of the species is quite well documented, but for some there are still major gaps.
Forest management practices: Appropriate forest development and management practices can often be inferred based on changes in the distribution and abundance of the organism historically, or from the deviation of human disturbance regimes from natural disturbance regimes. There is substantial anecdotal information on affects of forest management on some species, but a lack of rigorous experimental approaches, in an operational setting, designed to find the thresholds for sustainability.
Extension: The amount of information available to forest managers, on this issue, is fairly high. However, much of the recent FRBC inventory information has not been transmitted well to forest managers and planners, in formats that they can readily deal with (e.g., Extension Notes; workshops; seminars). In addition, considerably more effort should go in to presenting existing habitat selection and distribution information to planners in the form of habitat suitability and capability maps.

This covers organization, inventory and research. The status of extension information is very variable among species. Much of it is useable in the various scientific reports and publications. Some of it could be made more useful with specific publications and synopses for planners and managers, but this is a lower priority than collecting new information. There has been essentially no monitoring to date.

Required Knowledge-Building Activities in these Areas (as applicable):
The attached Table 2.21 summarizes the steps required to deal with this strategy. The chronology effectively proceeds from left to right across the Table. This is organized on a species by species basis.

Define Performance Indicators, Targets & Milestones:

There are dozens of possible activities in this Strategy, so performance indicators, targets and milestones are not possible for each one. In general, upcoming or ongoing LRMPs (NC, Mo) should receive direct attention for as wide an array of the species as possible, to put new information before a planning table. This is especially true for LRMP mandated species such as grizzly bear, wolverine and fisher.

Relationship to Other SSFM Knowledge Strategies (if applicable):
This strategy is clearly inter-related with Issue 1.32 and 1.21, in which various habitat layer inventories are proposed, notably PEM and VRI. PEM and VRI are often necessary layers from which to map species-specific habitat suitability and capability, and from which to derive habitat selection results. This means that priority should be given to completing PEM across the Region. However, there are numerous areas where PEM is close to being in place, and from which this strategy can be implemented for certain species.

There are numerous situations where certain pieces of work can and should be done before others, but all the linkages cannot be outlined in this document. The key criteria are a logical sequence of events among components of the strategy, and priority given to providing information to LRMP tables and to implementing existing LRMP recommendations.

Cross Reference to Management Unit Activities:
The italicized items in the attached Table could be considered potential activities. These are not all listed separately here, nor in the Regional Project Summary Table.

Activities are generally best delivered at the Forest District level, or with cooperation between a few FDs, so are listed in the following activity descriptions and include: Re2.21, La1, La6, Mo2, Mo3, Mo6, MoB, Bu14, Bu17, Bu, Ki6-H01, Ki6-H02, Ki6-H03, Ki6-H06, Ki6-H07, NC7, NC8, NC9

Table: Issue 2.21: Summary of Needs for New Information and Tools to Better Conserve Identified and Listed Species in the PRFR. Empty cells mean that needs are not high at present. Italicized cells are priority items, that could be considered projects. WHA = Wildlife Habitat Area as per the IWMS; AM = Adaptive Management. Forest Districts are referred to by two-letter code.

IWMS Species:	**VULNERABLE LIFE HISTORY**	**HABITAT SELECTION**	**INVENTORY of DISTRIBUTION**	**FOREST MANAGEMENT PRACTICES**	**EXTENSION**
Tailed Frog	Modelling of tadpole survival in stream & young frog survival on land	*Test model for southern populations with northern inventory data (Ka, NC)*	*More detailed distribution data for adults and tadpoles in Ka, NC*	*AM test of recommended silvicultural practices in WHAs*	
American Bittern	Nesting habitat security from human disturbance	*Assess use vs. availability of wetland types as part of distribution inventory (La, Mo, Bu)*	*Need nesting distribution data for La, Mo and Bu.*		
Sandhill Crane	Nesting habitat security from human disturbance	*Assess use vs. availability of wetland and bog types as part of distribution inventory (NC)*	*Need nesting distribution data for NC*		
Trumpeter Swan	Nesting habitat security from human disturbance	*Assess use vs. availability of wetland types as part of distribution inventory (Ca, Ka)*	*Need nesting distribution data for Ca, Ka*		
Northern Goshawk	Modelling of nesting habitat security and landscape foraging habitat availability	Complete nest area habitat selection model development based on current inventory (Ki, Mo, La). Develop model for nest site selection in Ka, NC.	*Complete nest inventory ongoing in Ki, Mo, La* Undertake nest inventory for Ka, NC, Ca.	*Continue implementation of AM project testing WHA prescriptions in Ki, Mo, and La.*	*Develop seminar / workshop to outline AM project, and other silvicultural prescriptions, to FD and licensee planners (Ki, Bu, Mo, La).* *Finalize preliminary habitat suitability and capability maps based on recent inventory (Ki).*
Ancient Murrelet	Nesting habitat security		*More complete assessment of breeding colony distribution and status (NC)*		
Cassin's Auklet	Nesting habitat security		*More complete assessment of breeding colony distribution and status (NC).*		
Marbled Murrelet	Nest habitat security	*Test existing model(s) of habitat selection with telemetry on adult birds (NC, Ka)*	*Landscape inventory of high use watersheds using radar (NC);*	*AM test of recommended silvicultural practices in WHAs (NC)*	*Develop seminar / workshop to outline recent research and inventory findings, and recommended mgmt practices to FD and licensee planners (NC, Ka).* *Produce nesting habitat suitability and capability maps based on update inventory info (NC, Ka).*
Keen's Long-eared Myotis	Security of natal roosts, and possible hibernacula	Assess use vs. availability of various forested habitats for roosting and foraging based on telemetry (NC, Ka)	Need data on distribution of this species (and other bats) on mainland PRFR (NC, Ka)		

Table: Issue 2.21: Summary of Needs for New Information and Tools to Better Conserve Identified and Listed Species in the PRFR. Empty cells mean that needs are not high at present. Italicized cells are priority items, that could be considered projects. WHA = Wildlife Habitat Area as per the IWMS; AM = Adaptive Management. Forest Districts are referred to by two-letter code.

IWMS Species:	**VULNERABLE LIFE HISTORY**	**HABITAT SELECTION**	**INVENTORY of DISTRIBUTION**	**FOREST MANAGEMENT PRACTICES**	**EXTENSION**
Fisher	Modelling relative impacts of natal den security and food limitation	*Assess use vs. availability of various forested habitats based on relative abundance inventory data (Ka, Ki, Bu, Mo, La, Ca)*	*Need relative abundance data on distribution of the species in various parts of the PRFR (track counts) (Ka, Ki, Bu, Mo, La, Ca)*		
Grizzly Bear		*Field validation of existing habitat suitability mapping (Ki, Mo, NC)*		*AM landscape scale test of effectiveness of access management on GB habitat use (Bu, Ki, Mo, Ca, NC))*	*Develop habitat capability, suitability and effectiveness mapping (1:20,000) for all planning areas (priority on Ki, northern Ka, La)*
Mountain Goat	Modelling relative impacts of snow depth and duration, vs. juvenile and adult survival on viability	*Field validation of existing habitat suitability mapping, esp. of winter habitat (Ki, Ka);* *Quantify forest habitat selection by non-alpine resident goat populations using GPS telemetry (Mo, La)*		*AM test of the effectiveness of access management on goat use of forested habitats (Mo)*	*Develop habitat suitability and capability mapping (1:20,000) for all planning areas (priority on Bu, northern Ka, Ca)*
Red & Blue List Species (not in IWMS)					
Red & Blue listed Plant Communities	Ecosystem integrity due to eradication and fragmentation of mature forest		*Need to find out where these communities are, and describe them (priority on Skeena bottomland and estuaries in Ka., NC ,Ki, Mo).*		*Integrate findings into LRMP processes.*
Great-blue Heron	Nest area security		*Field inventory of nest sites (NC).*		
Surf Scoter	Nest area security		Field inventory for potential nesting areas (Ca).		
Swainson's Hawk	Nest area security		Field inventory of nest sites (La, Mo, Bu, Ki)		
Gyrfalcon	Nest area security		Field inventory of nest sites (Ca)		
Sharp-tailed Grouse	Lek and nesting habitat security		Field inventory of leks and nests (La)		
Short-eared Owl	Nest site security	*Nest site use vs. availability based on nest site inventory and habitat mapping (La)*	*Inventory of nests to determine chronology and breeding success, esp. with respect to range activities (La)*		
	Security of natal roosts, and possible hibernacula	*Assess use vs. availability of various forested habitats for roosting and foraging based on telemetry (NC, Ka, Ki, Bu)*	*Need data on distribution of this species (and other bats) on mainland PRFR (NC, Ka, Ki, Bu)*		

Table: Issue 2.21: Summary of Needs for New Information and Tools to Better Conserve Identified and Listed Species in the PRFR. Empty cells mean that needs are not high at present. Italicized cells are priority items, that could be considered projects. WHA = Wildlife Habitat Area as per the IWMS; AM = Adaptive Management. Forest Districts are referred to by two-letter code.

IWMS Species:	**VULNERABLE LIFE HISTORY**	**HABITAT SELECTION**	**INVENTORY of DISTRIBUTION**	**FOREST MANAGEMENT PRACTICES**	**EXTENSION**
	Security of natal denning and rearing areas from human disturbance, and integrity of wolf-ungulate systems				*Develop habitat suitability mapping for wolverine natal denning and rearing areas (Mo, Bu, Ki)*
Mountain caribou (s. part of PRFR)	*Uncertainty as to the role of food limitation for pregnant females affecting calf viability vs. predation limitation in population declines (Need for field inventory work and modeling)*	*Habitat selection (use vs. availability) using GPS collars and a detailed habitat map(Bu, Mo, La, Ca);* *Investigation of the feedback of habitat carrying capacity on body condition (Bu, Mo, La, Ca)*			*Seminars / workshops to address recent information and present it in the light of forest planning (La, Mo, Bu)*
Bull Trout	Adults in summer holding areas (overfishing); Spawning areas		*Complete overview and recce inventories (Ca, Ka, Mo, Ki); Initiate species specific detailed inventory for documented distribution (Mo,Ki)*		

4.3.6.3 Description of Activities

Region

SSFM Issue #: 2.21	**Activity: Various**	**Activity #:**

Summary:
Strategy 2.21 includes dozens of potential activities. These cannot be addressed individually. They key ones are identified in Table 2.21. The scope of the issue is Region-wide, and the key tasks include habitat suitability and capability mapping, and baseline inventory.

Status:
This Strategy includes a few existing activities and numerous new ones.

Objectives:
The underlying objective of any of the Activities is to provide necessary data for the conservation of a viable population of the species in question in the planning unit.

Tasks, Deliverables, Targets and Milestones:
These cannot be listed here for each potential activity

Cost Sharing:
There are many opportunities for cost sharing of this work, including funding from HCTF and CRII (through LUCO). Funding may become available from federal sources regarding conservation of listed species.

Partnerships:
Partnership potential is wide for many potential activities, including working with federal agencies (CWS, DFO)

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
Unclear > $2 million	5	750,000	750,000	750,000	750,000	750,000	$4,500,000	10+

Lakes Forest District

SSFM Issue #: 2.21 (1.21, 1.32)	**Activity: Managing for Sensitive Wildlife**	**Activity #: La1, La6**

Summary:
This activity involves studying sensitive wildlife populations in the Lakes District (extending into the Morice District) for the purposes of identifying and creating strategies that will allow for increased resource extraction while maintaining the viability of the current populations. By better managing for and understanding the features that are required by wildlife, it is expected that the constraints placed on the timber harvesting landbase will be reduced and more timber will be available for harvesting or that the timing of timber harvest will be more flexible.

Most of this project is covered in La1; however, additional work on the Grizzly Bear population and the effect of logging on its habitat are currently being considered as well as a study on the Canadian Lynx and Snowshoe Hare populations and their inter-relationship (La6). The Lynx and Hare study is based on evidence from the U. S. that increased disturbance can modify the peak and trough cycle of these two populations.

Status:
This project is made up of four project from the 2001-2002 fiscal year: The caribou lichen study; The caribou/moose radio collaring study; The mountain goat Monitoring study; and The northern goshawk project. Part of this project will finish in the 2003-2004 fiscal year with the remaining portions being completed in the 2005-2006 fiscal year. The study of additional wildlife species may be added to this project given additional funding.

Objectives:
Lakes District has an approved LRMP. It is important to monitor the LRMP (as required in Chapters 3.1 General Resource Management objectives, 3.4 Environmental Direction, 4.1 Resource Management Zones, 5.3 Environmental Resource Analysis and Chapter 6, Plan Management and Administration).

Lakes Landscape Unit Planning (LUPs) must ensure appropriate attributes in OGMAs, FENS and riparian areas. Habitat requirements for Caribou and Grizzly Bear as per section 2.4.3 and appendix A-1 of TSR II must be further refined in preparation for TSR III.

The greatest risk to land use decisions is the locations of these networks, habitats and restrictions.

Predictive Ecosystem Mapping and to a lesser extent, VRI will complete many of our existing knowledge gaps

Objective 1.21 This project will be critical for determining the placement of OGMAs, FENs and sensitive areas during landscape unit planning as there is very little information about identified wildlife species in the Lakes District.

Objective 1.32 This project will provide the TSR process with updated information and strategies that will be incorporated into TSR III.

Objective 2.21This project will provide the critical information necessary to develop a strategy about the conservation of viable populations of wildlife species by providing migration patterns, habitat requirements and the identification of population centres.

Tasks, Deliverables, Targets and Milestones:

i. To study the relationship of lichen to site series and different levels of disturbance. To identify the relationship between lichen and caribou habitat. To form a strategy around preserving high lichen areas and caribou habitat. Expected completion is in 2006.

ii. To study the migration patterns of Caribou and any affects of disturbance on migration patterns. To build a strategy to reduce disturbance that may effect Caribou migration. Expected completion is in 2006.

iii. To study mountain goat populations and the effect of disturbance on their use of potential habitat and their migration patterns. To prepare a strategy that will allow for resource extraction while maintaining the current mountain goat population and habitat. Expected completion is in 2004.

iv. To study Northern Goshawks and the effects of logging on their habitat. To make recommendations and prepare a strategy for logging operations in and around potential goshawk nesting sites. Expected completion is in 2004.

v. To study grizzly bears and their habitat. To make recommendations and prepare a strategy for logging operations in critical habitat areas. The study is expected to last five years from the start date. Additional work beyond obligations is proposed La6.

vi. To study the population inter-relationship between snowshoe hares and the Canadian Lynx and the disturbance level of their habitat. To make recommendations and prepare a strategy for logging operations in critical habitat areas. The study is expected to last seven years from the start date. Additional work beyond obligations is proposed La6.

Cost Sharing:
There currently are no cost sharing or in-kind contributions.

Partnerships:
There are currently no partnership agreements. This activity may be transferred to the Lakes-Morice IFPA.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
La1 330,000	3	190,000	190,000	80,000	80,000		870,000	7
La6		80,000	80,000	80,000	80,000	80,000	400,000	7

Morice Forest District

SSFM Issue #: 2.21 **(1.21, 1.32)**	**Activity: Mountain Goat Response to Forest Development**	**Activity #: MO2**

Summary:

i. Mtn. Goat responses to forest development. The scope of the project is to identify all existing and potential goat habitat as an initial step. The next step is link and develop management strategies with tools to develop sustainable management of populations

ii. Morice, Lakes, Bulkley

Status: Existing

Objectives:

One of the high priority Regional issues for the Morice is to identify existing and potential habitat to ensure that the identified wildlife species can be managed sustainably. At this time, there is uncertainty in the Morice around identifying and managing for Mtn. Goat habitat and there are no management strategies in place at this time to ensure that Mtn. Goat populations will be managed sustainably in the Morice.

Mountain goats are a fine filter species and an identified wildlife species in the Morice District. Lack of understanding of their habitat and response to forest management activities exposes goat populations to risk of habitat loss. Loss of habitat increases the risk that we will not be managing goat habitat so that a viable and sustainable population can be maintained.

Currently TSR does not address timber constraints for managing goat habitat. Mountain goats have been identified as an important value during the IFPA process. Licensees, MoF and MELP have identified lack of wildlife habitat information as a significant gap in knowledge. Conservation and enhancement of sustainable populations cannot be done without understanding of habitat range and population dynamics.

Tasks, Deliverables, Targets and Milestones:

i. Develop management strategies and predictive tools to ensure sustainable management of goat populations. Identify existing and potential goat habitat in forested landbase. Link to exiting data to assist with developing predictive tools. Combining data and tools will help to ensure sustainable management of goat populations.

ii. Completion projected for fiscal 2003-2004.

Cost Sharing: To be funded by MYA holders and SBFEP in Morice and Lakes.

Partnerships: Deliverables will be shared between districts, agencies, First Nations and licensees.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
305,000	4	85,000	50,000				440,000	6

SSFM Issue #: 2.21 **(1.21, 1.32)**	**Activity: Goshawk Nest Inventory**	**Activity #:MO3**

Summary:

i. Goshawk Nest Inventory and Monitoring
ii. Morice, Lakes, Bulkley

Status: Existing

Objectives:

One of the high priority Regional issues for the Morice is to identify existing and potential habitat to ensure that the identified wildlife species can be managed sustainably. At this time, there is uncertainty in the Morice around identifying and managing for Goshawk habitat and there are no management strategies in place at this time to ensure that Goshawk populations will be managed sustainably in the Morice.

Goshawks are a fine filter species and an identified wildlife species. Identification of existing and potential habitat and degree of use will provide valuable information to understand how to manage a sustainable goshawk population. This information will also be used to IWMS to apply and then test IWMS strategies to manage goshawks and help identify WHAs for goshawks.

Currently, TSR does not address timber constraints for managing goshawk habitat. Goshawks have been identified as an important value during the IFPA process. Licensees, MoF and MELP have identified this lack of wildlife habitat information as a significant gap in knowledge. Conservation and enhancement of sustainable populations cannot be done without understanding of habitat range and population dynamics.

To continue field data collection to develop management strategies and predictive tools to ensure sustainable management of populations.

Tasks, Deliverables, Targets and Milestones:

i. Identification of existing and potential goshawk habitat, application of information to IWMS, development of WHAs and adaptive management process for sustainable management strategies.
ii. Completion 2004-5 fiscal year

Cost Sharing: Funded by MYA holders in Morice

Partnerships: Field data and management strategies to be shared between districts, licensees and agencies and First Nations.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
275,000	2	50,000	50,000	35,000			410,000	5

SSFM Issue #: 2.21 **(1.21, 1.32)**	**Activity: Grizzly Bear Suitability Mapping**	**Activity #: MO6**

Summary:

i. Mapping of Grizzly Bear capability and suitability of habitat that will tie into known habitat locations.
ii. Morice

Status: New

Objectives:

One of the high priority Regional issues for the Morice is to identify existing and potential habitat to ensure that the identified wildlife species can be managed sustainably. At this time, there is uncertainty in the Morice around identifying and managing for Grizzly habitat and there are no management strategies in place at this time to ensure that Grizzly populations will be managed sustainably in the Morice.

Grizzly Bears are a fine filter species and an identified wildlife species. Identification of existing and potential habitat and degree of use will provide the first step in identifying valuable information for understanding how to manage sustainable grizzly populations. This project will also help in the identification/development of sustainable management strategies for Grizzly Bears in the Morice. This information will also be utilised by IWMS to apply and then test IWMS strategies to be able to manage grizzly bears and help in identifying WHAs.

Currently TSR does not address timber constraints for managing Grizzly Bear habitat. Grizzlies have been identified as an important value during the IFPA process. Licensees, MoF and MELP have identified the lack of grizzly bear habitat information as a significant gap in knowledge. Conservation and enhancement of sustainable populations cannot be done without understanding of habitat range and population dynamics.

Tasks, Deliverables, Targets and Milestones:

i. Map out existing and potential Grizzly Bear habitat which will help develop initial management strategies to ensure and or restore populations and asses the degree of use, quality and quantity of habitat and the potential to ensure sustainable management of populations.
ii. 2001-2002.

Cost Sharing: No funding for now

Partnerships:

Data and potential Grizzly Bear habitat mapping will be shared between licensees, agencies, First Nations.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	

SSFM Issue #: 2.21	**Activity: Bull Trout Species Inventory: Gosnell Creek Enumeration Weir**	**Activity #: MoB**

Summary:

i. determine feasibility of fence construction and operation;
ii. erect fence across Gosnell Cr. and maintain it from early July to early September (~90 days). All fish, but especially bull trout, moving up and downstream will be handled, counted, and measured.
iii. Gosnell/Thautil or just Gosnell portions of the Morice River watershed

Status: New

Objectives:

Assist with determination of vulnerable life history periods through the generation of mortality rate estimates.

Determine forest management and harvest management practices on population through population estimation and monitoring.

Tasks, Deliverables, Targets and Milestones:

i. scoping exercise for feasibility should be completed prior to initiation of project; if determined to be feasible, purchase fence materials; the following year install the fence prior to late July; initiate sampling and continue until the end of September. Because bull trout spawn on alternate years, the program should span a four-year period to capture bi-modal spawning period over a two replicates.
ii. a report describing the bull trout population and mortality rates will be produced each year. Fish data will be entered into FDIS for storage in the Fish Data Warehouse.

Cost Sharing:

Funding will be provided from MYA holders. WLAP Regional Fisheries Section will provide expertise, equipment as in-kind donations to the amount of approximately $10k annually. Fisheries & Oceans Canada have expressed an interest in the project and may be willing to contribute to the fence operational costs.

Partnerships:

There are no partnership commitments currently. Partnerships will be established between WLAP Regional Fisheries Section, MYAs, Fisheries & Oceans Canada and BC Conservation Foundation in the delivery of the project.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		$20,000	$38,000	$38,000	$38,000	$38,000	$172,000	5

Bulkley-Cassiar Forest District

SSFM Issue #: 2.21	**Activity: Telkwa Caribou Recovery Project**	**Activity #: Bu14**

Summary:
The Telkwa Caribou Recovery Project is an ongoing effort to re-establish a self-sustaining herd of mountain caribou centered on the Telkwa Mountains. To early 2001 the project has included augmenting a remnant caribou herd by introducing new animals, and monitoring the survival, productivity and habitat selection of the caribou to assess current and likely future limiting factors. Radiotelemetry is the primary research tool, and study techniques are repeated for a number of consecutive years to build up sufficient data to assess inter-annual variability in survival and productivity, and changes in limiting factors with changing conditions and caribou numbers. At the end of the study, the data gathered will then be used to revise existing interim guidelines on forest harvesting within the Telkwa Caribou Herd Recovery Area, and assess the need and feasibility of any additional management activities to mitigate factors limiting a self-sustaining herd.

This project is a high priority activity within the wide range of potential activities that could be initiated under the general issue of sustaining populations of listed and identified wildlife in the Bulkley FD. The Bulkley LRMP mandates government to gather the necessary information to develop management guidelines to ensure a self-sustaining caribou herd. At the same time, mountain caribou are known to be particularly sensitive to the ecosystem changes that result from forest harvesting.

The Telkwa Caribou project is centered in the Telkwa Mountains, which are located in both the Morice and Bulkley Forest Districts. However, some of the radio-collared caribou have ranged as far afield as the Lakes District.

Status: Existing

Objectives:
Conservation of listed species, and identified wildlife species, is a key issue (Regional -2.21; Bu 14, and also Bu-2, Bu-15 and Bu-17) for sustainable forest management in the Bulkley Forest District. Of the numerous species that could be addressed, the mountain caribou is high priority because:

- Caribou habitat and survival is known to be negatively impacted by forest development and associated changes in availability of key forested habitats, and in vulnerability to predation given changes in the food web resulting from forest harvesting.
- The Telkwa caribou herd has been identified by the Bulkley LRMP as warranting study to identify current limiting factors, habitat conservation measures, and management activities to augment and recover the herd.

Other species will require attention, but, in many cases their vulnerability is less severe, and may require less long-term planning.

The current objectives are:

(i) To monitor survival and productivity of all sex and age classes to assess sources of mortality, and rates of population growth (a demographic assessment of vulnerable life history stages)

(ii) To measure habitat selection by caribou at various times of year.

(iii) To work with forest managers, licensees and public interest groups in extension of the study findings, and developing plans to mitigate negative human impacts (e.g., back-country recreation).

These objectives are ongoing, largely based on radio-telemetry. Collars will function for another two years, after which the combined data can best be analyzed and written up. Public education and extension work with forest managers and public interest groups is ongoing.

Tasks, Deliverables, Targets and Milestones:

The following are organized by Objective:

(i) Tasks include (a) weekly monitoring of radiocollared caribou to document survival and movements among seasonal ranges, and (b) spring and fall cow: calf counts to measure calf production and survival. Deliverable is an annual report. Target is to continue to gather data until 2004 (lifespan of collars), before final report writing.

(ii) Tasks include (a) monthly download of GPS collar data to assess habitat selection, (b) development of an alpine plant community map, (c) analysis of data. Deliverable is an annual report. Target is to continue to gather data until 2004 (lifespan of collars), before final report writing.

(iii) Tasks and deliverables include (a) monthly reports circulated to government and non-government personnel and groups, (b) regular liaison with backcountry user groups (e.g. Houston Snowmobile Club) in dealing with minimizing disturbance to caribou, (c) re-convening the working group assessing harvesting guidelines in the Telkwa Mtns, and (d) public lectures, workshops and publications summarizing the results of the work towards the end of the study. Targets include keeping these tasks as ongoing, iterative activities, with a particular push towards the end of the study.

This study is linked to the Telkwa Lichen study (FRBC funded through Canfor) which is now mostly complete, and which will be used as an additional data layer in the final analyses.

Cost Sharing:

Since its inception, funding for this project has been shared between FRBC, and the Habitat Conservation Trust Fund. Regional Operations of the Wildlife Section of the Ministry of Water, Land and Air Protection (formerly MELP) have contributed significant personnel time, and use of equipment. The cost sharing arrangement is expected to continue, as is the contribution in kind from MWLAP.

Partnerships:

There are no formal partnership arrangements in the delivery of this project.

However, a partnership of licensees (Canfor, Houston Forest Products, Pacific Inland Resources) and government agencies (Small Business FEP in Morice, MoF PRFR, MWLAP) already exists for implementing Interim Harvesting Guidelines in the Telkwa Caribou Herd Recovery Area . This agreement is linked to the Telkwa Caribou project and the Telkwa Lichen project in that these projects are expected to provide data for future refinement of the Interim Guidelines.

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
231,000	4	50,000	50,000	50,000	0	0	381,000	7

SSFM Issue #: 2.21	Activity: Assessment of habitat use by grizzly bears along the Babine River	Activity #: Bu17

Summary:

Regional Issue - How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?

Grizzly bears are Blue Listed by COSEWIC and are an Identified Wildlife Species under the Forest Practices Code. They are potentially impacted by various types of human activity including timber harvesting, First Nation fisheries, bear viewing, guided and non-guided fishing and hunting, and whitewater rafting and kayaking. The high priority for grizzly bear conservation is evidenced at the Regional level by inclusion of the species in LRMPs for the Bulkley, Kispiox, Kalum and North Coast Districts an at the Provincial level through the development of a Provincial Grizzly Bear Conservation Strategy.

To date there has not been a study of grizzly bears in the interior portion of the Region and this lack of local knowledge limits the effectiveness and confidence of forest managers to incorporate grizzly requirements into forest management planning. Skeena Cellulose Inc. is initiating this study to address this knowledge gap and increase the knowledge of grizzly bear habitat use and effects of forest development activities on grizzly bears within local biogeoclimatic subzones. Specifically, this work will verify expert driven habitat models and assumptions that have been or are currently being incorporated into broad scale forest planning and management initiatives in the Region, such as the Bulkley, Kispiox and Kalum Land and Resource Management Plans and the Babine River Local Resource Use Plan. Results from this project will facilitate data driven planning and decision tools that strike the best balance of maximizing grizzly conservation and minimizing timber development impacts.

The core study are for this project is along the Babine River, however, the results of the project will have broader applicability for effective forest management to meet grizzly bear requirements across the region and province.

Status: This is a new project resulting from a habitat mapping project conducted in 1999/2000.

Objectives:

1. Quantify habitat use of grizzly bears in local ICH, SBS, ESSF, and, possibly, CWH biogeoclimatic subzones to facilitate data-driven correlation, verification and refinement of existing and future expert-based habitat suitability models.
2. Examine how elements of forest development such as roads and cutblocks affect habitat use, that is, habitat effectiveness.
3. Assess seasonal habitat use and movement patterns that will be incorporated into timing and access management components of higher level plans.
4. Examine stand level use of particularly high value habitats and develop stand level management strategies or evaluate the appropriateness of existing strategies in maintaining bear use while minimizing timber development impacts. This work will focus in particular on the requirement for mature coniferous buffers adjacent to non-forested or deciduous leading habitats.
5. Identify high value, site-specific habitat features such as trails, dens, and fishing sites that are not identifiable from existing inventory data for consideration in stand and landscape level forest management planning.

These objectives clearly address the priority knowledge building activities for grizzly bears outlined in the "Template 2 – Knowledge Strategies" document for issue 2.21.

Additionally, information from this work is inter-related with regional issues 1.21 and 1.32. Detailed work from this project will help identify high value attribute and sensitive areas associated with Landscape Unit planning within the study area and has broader applicability to grizzly suitability ratings for PEM projects in other areas (1.21). Habitat protection measures for grizzly bears are mandated in the Bulkley, Kispiox and Kalum LRMPs (and are being developed in the North Coast and Morice). Identification of high value habitats are an integral inventory for implementation of the LRMPs and will be used for future TSRs in these Districts (1.32)

Tasks, Deliverables, Targets and Milestones:
To meet the objectives of this project the primary techniques will involve tracking a subsample of grizzly bears via GPS radio collars and analyzing those locations with respect to habitat selection, movement patterns, verification of habitat suitability models, and forest development.

Deliverables will include annual progress reports and a final report detailing the results of the study and management recommendations. The expected outcome of this work will be greater certainty for forest managers in developing strategic and operational plans that both conserve grizzly bears and their habitat and meet timber development objectives.

Targets, in terms of sample size requirements & project term, will be developed in year one.

Cost Sharing:
Substantial cost sharing has been provided by MELP in 2001/02. This includes the donation of 12 GPS collars valued at approximately $50,000 and 2 months of field work by MELP personnel. Future assistance with field work is anticipated in future years of the project but cannot be confirmed at this time.

Partnerships:
Partnerships among relevant stakeholders are still being developed during this first year of the project. Partners to date include SCI, MELP, MoF, BC Parks, NW Guides Association, and Gitxsan - House of Gwinin Nitxw. Additional partners are expected, including additional Gitxsan House Territories. Interested stakeholders will be primarily involved in the project through a steering committee, however, there may be an opportunity to hire certain stakeholders to assist with the data collection of the project.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
$165,000 Kispiox	1	$16,000 Bulkley	$16,000 Bulkley	$16,000 Bulkley	?		$48,000 Bulkley	3-5

SSFM Issue #: 2.21	**Activity: Bulkley River Bull trout Species Level Inventory**	**Activity #: Bu**

Summary:
Once Reconnaissance 1:20,000 Fish & Fish Habitat Inventories have been completed for watershed units and rare & endangered species have been identified as being present, species level inventories may then be undertaken. Bull trout constitute the main blue listed species of focus currently in the Region. Species level inventories generally provide details of the critical habitat requirements for the population at watershed scale. Information on run timing, spatial distribution, habitat use and life history characteristics can also be gained from species level inventories. Two methods exist to provide the necessary information; ground based inventories and radio telemetry studies. Ground based inventories are more suitable for smaller watershed areas, whereas radio telemetry is better suited for larger scale studies.

i. Conduct radio telemetry studies & ground based inventories to locate and confirm critical habitat areas;

ii. Bulkley & Telkwa rivers

Status: New

Objectives:
A priority issue for all forest districts and particularly the Bulkley is: "How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base (Issue 2.21)?"

This activity is inter-related to SSFM issues, 1.21, 1.23, 3.11 and 3.13 as expressed in Bulkley priority issues Bu4, Bu5, Bu11 defined in the 2001-2005 RMP.

There are currently no activities underway in the Bulkley FD to address the viability of bull trout (IW species) populations. The first step to address this issue, completion of district wide reconnaissance fish & fish habitat inventories, has been completed since 1997. Species level inventories completed to identify critical habitats and their use by bull trout within large watershed units (5-7th order), throughout the year, are required. Data that will describe the population's life history characteristics will assist with management activities and decisions regarding habitat protection and harvest.

There are not any other activities that will fill this knowledge gap in the Bulkley over the next 5 years.

Tasks, Deliverables, Targets and Milestones:

i. Acquire radio tags and receivers; capture and tag bull trout; track fish locations throughout the year and intensify monitoring surrounding the spawning season.

ii. Tag acquisition should be initiated in April; tags applied prior to June 15; tracking completed throughout fiscal year with the use of helicopter or fixed wing aircraft. Should tag application not be completed in spring, fall application may be completed. However, funding for the following fiscal year is necessary to track fish movements into the following summer and fall.

iii. Deliverables: 1:20,000 scale maps and spatial files depicting critical habitats and timing of use for bull trout within the watershed unit; report describing population characteristics and providing information to refine in-stream work windows, harvest regulations, riparian reserve activities and watershed restoration activities

iv. Targets: Tag 20-50 BT and track positions monthly from October-May, and weekly June July, every three days in mid-August to mid-September, weekly from September to October. Complete studies on one identified river every two years. Conduct ground based surveys confirm reaches with spawning activity.

Cost Sharing:
Telemetry studies require funding from MYA holders and may be completed by contractors, university graduate students or WLAP Fisheries Section staff. Regional Fisheries Section staff may provide expertise & equipment. This represents substantial in-kind contribution, in the order of $50-70k per project. The Fisheries Section has the capacity to deliver two radio telemetry projects/year.

Partnerships: There are no current partnership agreements in place for the Bulkley bull trout project.

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
$0	new	$70k	$40k					2

Note: Costs provided include tag purchase, receiver rental, air charters and expenses over a typical two year project.

Kispiox Forest District

SSFM Issue #: 2.21	**Activity: Assessment of potential impacts of timber development near Northern Goshawk nest areas.**	**Activity #: Ki6-H01**

Summary:
The northern goshawk is classified as an 'Identified Wildlife Species' under the Forest Practices Code (FPC). This status indicates that the coarse filter management recommendations of the FPC Biodiversity Guidebook are unlikely to maintain the habitat requirements of the species and that special management guidelines are required. Current FPC management guidelines within the Identified Wildlife Management Strategy for conserving goshawk nest areas include the delineation of large Wildlife Habitat Areas (WHAs) of 240 ha with significant restrictions on timber harvesting within that area. However, due to high impacts to AAC few nest areas are being protected under the existing guidelines. Management and conservation of the goshawk within a large area such as a Forest District requires alternate management methods that will maintain nesting habitat for known goshawk pairs.

Through previous inventory work we have located 28 nest areas within the KFD and are in a unique situation to monitor the response of goshawks to proposed timber development adjacent to a subsample of these nest areas (18 treatment nests, 10 controls). Assessment of these management trials has been formalized into a regional adaptive management strategy and includes collaboration among several forest licensees, BC Ministry of Forests, and BC Ministry of Environment, Lands and Parks. Results from these trials will also be assessed with similar trials in a concurrent goshawk study in the Lakes and Morice Forest Districts (LMFD). Collectively these adaptive management trials represent the most comprehensive study examining the potential impacts of stand level forest management activities near goshawk nests. Results from this work will contribute significantly to our knowledge of goshawk nest area habitat requirements and ability to develop effective forest management prescriptions while minimizing restrictions to timber harvest. Without the data, these become uncertainties in TSR, and lead to potential problems with AAC. At the stand level, uncertainty as to how to managed for goshawk nest areas results in costly delays, amendments or deferrals of timber development.

Status:
This is a scaled back continuation of an existing project. Work to date has resulted in the location of a large number of goshawk nests, which occur at low densities across the landscape and which are relatively difficult to find. Proposed timber development near some of these nests provides an opportunity to monitor the direct effects of varying levels of forest development on nesting goshawks. Given our relatively high sample size and ability to lump data with a concurrent project in the Lakes and Morice District, this will be the most comprehensive study of this type done of goshawks to date. Failing to take advantage of situation would result in the loss of a unique opportunity.

Objectives:
The objective of this project is to assess the effects of a range of forest development levels near known goshawk nest areas on re-occupancy and breeding success of the 28 known nest areas within the KFD.

Tasks, Deliverables, Targets and Milestones:
To meet the objective of this project field crews will monitor occupation and breeding success at the 28 known nest areas at four key periods within the breeding season. Findings will be analyzed to assess potential impacts of forest development on nesting success.

Deliverables will include annual progress reports and a final report detailing the results of the study and management recommendations. The expected outcome of this work will be greater certainty for forest managers in developing strategic and operational plans that both conserve goshawk nest areas and meet timber development objectives.

Targets, in terms of sample size requirements and project term, will be developed during the first year of the project.

Cost Sharing:
Project partners make significant annual in-kind contributions of staff time, both in terms of field observations and participation in working group meetings.

Partnerships:
This project includes a partnership among six levels of forest sector users across the Prince Rupert Forest Region: 6 forest licensees, Ministry of Forests Regional and District offices, BC Environment Regional and District offices, and consulting biologists. This partnership has been formalized within an official Adaptive Management Strategy coordinated by BC Environment, Skeena Region.

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
$527,000	5	$60,000	$60,000	$60,000	$60,000		$767,000	9

SSFM Issue #: 2.21	**Activity: 1:20,000 wildlife suitability maps**	**Activity #: Ki6-H02**

Summary:
The goal of this project is to prepare 1:20,000 grizzly bear, mountain goat, moose and mule deer suitability maps for the Kispiox Forest District, based on forest cover and TRIM attributes.

These species have been targeting as a result of the IWMS and LRMP direction.

Status:
In January 1999, the Kispiox Forest District, in co-operation with the BC Environment forest ecosystem specialist, initiated wildlife suitability mapping for the Kispiox Forest District. In 2000, the project solicited FRBC funds, and expended the project to include both regional MoF and MELP staff as well as forest licensees, particularly SCI.

Draft grizzly bear mapping is available for the ICH, ESSF and SBS within the Kispiox Forest District for the spring, summer and fall seasons. A draft report has been prepared which outlines the life history requirements, habitat suitability and a description of the model. Limited field verification occurred during the summer.

Draft winter moose mapping is available for the district. Two moose models have been developed, one for the southern portion, and a second for the northern portion of the district, as habitat requirements change as snow loads increase. A report has yet to be prepared.

Draft winter goat mapping is available. A report is yet to be prepared.

Objectives:
- To identify life history requirements for each species (bullet 2 in knowledge strategy).
- To identify habitat suitability criteria for each species (bullet 3 in knowledge strategy).
- To prepare wildlife suitability models for each listed species using TRIM and forest cover information (bullet 4 in knowledge strategy).

Tasks, Deliverables, Targets and Milestones:
Specific products will be:
- Three grizzly bear suitability outputs, including report, for spring, summer and fall–March/02.
- Two moose suitability outputs, including report, for winter – March 2002.
- One goat suitability output, including report, for winter – March 2002.

Cost Sharing: N/A

Partnerships: This is a joint project between Ministry of Forests, BC Environment, and SCI.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
78,000	2	50,000					128,000	3

SSFM Issue #: 2.21	**Activity: Assessment of habitat use by grizzly bears along the Babine River**	**Activity #: Ki6-H03**

Summary:

Regional Issue - How can we conserve viable populations of Identified Wildlife Species, and rare and endangered species (red and blue listed), that inhabit the forested land base?

Grizzly bears are Blue Listed by COSEWIC and are an Identified Wildlife Species under the Forest Practices Code. They are potentially impacted by various types of human activity including timber harvesting, First Nation fisheries, bear viewing, guided and non-guided fishing and hunting, and whitewater rafting and kayaking. The high priority for grizzly bear conservation is evidenced at the Regional level by inclusion of the species in LRMPs for the Bulkley, Kispiox, Kalum and North Coast Districts an at the Provincial level through the development of a Provincial Grizzly Bear Conservation Strategy.

To date there has not been a study of grizzly bears in the interior portion of the Region and this lack of local knowledge limits the effectiveness and confidence of forest managers to incorporate grizzly requirements into forest management planning. Skeena Cellulose Inc. is initiating this study to address this knowledge gap and increase the knowledge of grizzly bear habitat use and effects of forest development activities on grizzly bears within local biogeoclimatic subzones. Specifically, this work will verify expert driven habitat models and assumptions that have been or are currently being incorporated into broad scale forest planning and management initiatives in the Region, such as the Bulkley, Kispiox and Kalum Land and Resource Management Plans and the Babine River Local Resource Use Plan. Results from this project will facilitate data driven planning and decision tools that strike the best balance of maximizing grizzly conservation and minimizing timber development impacts.

The core study are for this project is along the Babine River, however, the results of the project will have broader applicability for effective forest management to meet grizzly bear requirements across the region and province.

Status:

This is a project resulting from the wildlife suitability mapping project conducted in 1999/2000. Year one of this project is being funded through the wildlife suitability mapping activity. Year two funding will be a separate activity.

Objectives:

1. Quantify habitat use of grizzly bears in local ICH, SBS, ESSF, and, possibly, CWH biogeoclimatic subzones to facilitate data-driven correlation, verification and refinement of existing and future expert-based habitat suitability models.
2. Examine how elements of forest development such as roads and cutblocks affect habitat use, that is, habitat effectiveness.
3. Assess seasonal habitat use and movement patterns that will be incorporated into timing and access management components of higher level plans.
4. Examine stand level use of particularly high value habitats & develop stand level management strategies or evaluate appropriateness of existing strategies in maintaining bear use while minimizing timber development impacts. This work will focus on the requirement for mature coniferous buffers adjacent to non-forested or deciduous leading habitats.
5. Identify high value, site-specific habitat features such as trails, dens, and fishing sites that are not identifiable from existing inventory data for consideration in stand and landscape level forest management planning.

These objectives clearly address the priority knowledge building activities for grizzly bears outlined in the "Template 2 – Knowledge Strategies" document for issue 2.21.

Additionally, information from this work is inter-related with regional issues 1.21 and 1.32. Detailed work from this project will help identify high value attribute and sensitive areas associated with Landscape Unit planning within the study area and has broader applicability to grizzly suitability ratings for PEM projects in other areas (1.21). Habitat protection measures for grizzly bears are mandated in the Bulkley, Kispiox and Kalum LRMPs (and are being developed in the North Coast and Morice). Identification of high value habitats are an integral inventory for implementation of the LRMPs and will be used for future TSRs in these Districts (1.32)

Tasks, Deliverables, Targets and Milestones:

To meet the objectives of this project the primary techniques will involve tracking a subsample of grizzly bears via GPS radio collars and analyzing those locations with respect to habitat selection, movement patterns, verification of habitat suitability models, and forest development.

Deliverables will include annual progress reports and a final report detailing the results of the study and management recommendations. The expected outcome of this work will be greater certainty for forest managers in developing strategic and operational plans that both conserve grizzly bears and their habitat and meet timber development objectives.

Targets, in terms of sample size requirements & project term, will be developed in year one.

Cost Sharing:

Substantial cost sharing has been provided by MELP in 2001/02. This includes the donation of 12 GPS collars valued at approximately $50,000 and 2 months of field work by MELP personnel. Future assistance with field work is anticipated in future years of the project but cannot be confirmed at this time.

Partnerships:

Partnerships among relevant stakeholders are still being developed during this first year of the project. Partners to date include Skeena Cellulose, MELP, MoF, BC Parks, NW Guides Association, and Gitxsan - House of Gwinin Nitxw. Additional partners are expected, including additional Gitxsan House Territories. Interested stakeholders will be primarily involved in the project through a steering committee, however, there may be an opportunity to hire certain stakeholders to assist with the data collection of the project.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
$165,000	1	$235,000	$235,000	$185,000	?		$820,000	4-5

SSFM Issue #: 2.21	**Activity: Grizzly Bear Habitat Use Monitoring in the Nangeese watershed**	**Activity #: Ki6-H06**

Summary:
Grizzly bears are a Blue Listed Species and are an Identified Wildlife Species under the Forest Practices Code. They are potentially impacted by various types of human activity, for industrial use to recreational use. Industrial impacts include loss of habitat and loss of effective habitat (that is, the habitat still exists, but is no longer being used by grizzly bears).
The purpose of this study is to detect changes in the presence of grizzly bears, as an indicator of habitat use, as resource development proceeds into the Nangeese river watershed.

Status:
The Kispiox Forest District Small Business Enterprise Program, through internal funding, is initiating this project in the 2001-2002 fiscal. However, the strategic need for this information affects all agencies and licensees land use decisions.

Objectives:
This project addressees regional issue 2.21, the need to conserve viable population so Identified Wildlife Species and rare and endangered species. Grizzly Bear are a blue listed species in Kispiox. The goal of this project is to assess the effects of proposed timber harvest and road building activities on grizzly bears in the Nangeese river watershed. In order to achieve this goal, the following objectives are proposed: development of a monitoring methodology that can effectively track grizzly bear presence in the watershed, and implementation of the proposed monitoring program in order to gather pre-harvest baseline data.

This project meets the knowledge strategies for life history, habitat selection, inventory and forest management practice.

Tasks, Deliverables, Targets and Milestones:
An assessment of the presence/absence of grizzly bears as an indicator of changes in the use of specific habitat types.

Cost Sharing:
Cost sharing will occur with the Kispiox Small Business Forest Enterprise Program.

Partnerships:
Small Business Forest Enterprise Program – Expertise and funding
District BC Environment - Expertise

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		$50,000	$50,000	$50,000			$150,000	3

SSFM Issue #: 2.21	**Activity: Bull Trout Studies**	**Activity #: Ki6-H07**

Summary:
The Kispiox LRMP has a higher level plan objective that states "to protect the following sensitive fish populations and habitat: stream reached with identified populations of bull trout". In addition, Bull Trout is a blue listed identified wildlife species.

Further information on this project will be provided by September.

Status: This is a new project.

Objectives:
Regional Issue 2.21 identifies the need to conserve viable populations of Identified Wildlife Species and rare and endangered species. In order to know how to conserve these species there is a need to understand exactly where they are located. This project also addresses Regional Issue 1.21. In order to determine the appropriate riparian attributes in Landscape unit plans it is important to know the stream types and cover requirements for Bull Trout.

The objective of this project is to identify streams with bull trout. Tagging bull trout will gain information on life history and habitat requirements. This meets knowledge strategies for life history, habitat selection and inventory.

Tasks, Deliverables, Targets and Milestones:
Mapped locations of bull trout within the Kispiox Forest District. In addition, life history information for bull trout within the district.

Cost Sharing: None

Partnerships:
Region and District BC Environment.
Kispiox Forest District supports this initiative, as a supporting agency in LRMP implementation.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		$50,000	$50,000	$50,000			$150,000	3

North Coast Forest District

SSFM Issue #: 2.21 | **Activity: Marbled Murrelet Study** | **Activity #: NC 07**

Summary:
Study habitat suitability and potential for Marbled Murrelet throughout North Coast TSA.

Status: This project is entering phase 3 of a 4 phase project.

Objectives:
Monitor and report on Murrelet site.
Provide information for landscape unit planning and for the North Coast LRMP.

Tasks, Deliverables, Targets and Milestones:
Monitor sites identified by previous studies to determine Murrelet presence.
Develop a report outlining the results and findings.

Cost Sharing:

Partnerships:

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
82,000	1	40,000					40,000	2

SSFM Issue #: 2.21 | **Activity: Effect of Log Dumps on Foreshore Habitat** | **Activity #: NC 08**

Summary:
Study what/if any effects log dumps have on herring spawn areas throughout the North Coast.

Status:
There is very little information available on what effects log dumps have on herring spawn. This study should provide some insight on how log dump selection can be improved to minimize their impacts on Herring spawn.

Objectives:
Determine if log dumps negatively impact herring spawn.
Develop a set of guidelines to select log dumps so that herring spawn impacts are minimized.

Tasks, Deliverables, Targets and Milestones:
Inventory North Coast log dumps and monitor effects on herring spawn. Determine variability between sites and identify characteristics which have most effect. Produce report to enable forest companies to select sites that minimize effects on herring spawn.

Cost Sharing:

Partnerships: Interfor.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
0		75,000					75,000	1

SSFM Issue #: 2.21	**Activity: Ungulate Habitat Assessments**	**Activity #: NC 09**

Summary:
- Determine ungulate habitat requirements for the North Coast.
- This study will cover areas throughout the North Coast TSA.

Status:
This is a new project that will inventory information on ungulate habitat requirements.

Objectives:
- To determine where suitable ungulate winter ranges exist.
- Develop a report outlining the habitats that are suitable for ungulates winter range.

Tasks, Deliverables, Targets and Milestones:
- Inventory North Coast landbase to determine where suitable ungulate winter range exists.
- Develop a report outlining the results and findings that can be used in the LRMP and development of landscape unit objective.

Cost Sharing:

Partnerships:

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		75,000					75,000	1

4.3.7 Issue 3.12--What are the best management practices for operations on steep slopes with respect to conserving water quality and quantity, slope stability and productive land base?

4.3.7.1 Description of Issue

Overview Description of the Regional Strategic Issue:
Hillslope failures constitute the dominant geomorphic process in steep mountain landscapes. The failure processes described as debris slides-avalanches-flows-torrents occur during large magnitude storms. During big storms most of the geomorphic work in watershed takes place—debris/sediment transported and stream channel changes. Hillslope failure rates are increased by forest harvesting activities of road building and harvesting. Forest workers are placed at risk with operation down slope or on potentially unstable terrain. Slope failure result in the potential loss or destruction of forest site productivity, water quality and stream habitat. It is possible to manage forest land and substantially reduce the likelihood of landslides by recognizing and avoiding unstable terrain, using appropriate harvesting systems and carefully designing, constructing and maintaining roads.

Relationship to Sustainable Forest Management:
Reliable and accurate mapping of unstable terrain will reduce the uncertainty of decision regarding the potential impact of timber harvesting in potentially unstable watersheds on forest site productivity, water quality and riparian habitat. This can be achieved through improved identification of the land base available for timber harvest, improved estimates of available timber supply, and planning for appropriate harvesting/silvicultural systems in a watershed.

Relationship to Strategic Resource Plans and Decisions:
Strategic Decisions
Timber supply reviews in the North Coast and in other TSAs have relied on forest inventory ES1 and ES2 designation for their analysis. The delineated unstable terrain as represented by the ES categories are found to be an inaccurate representation of unstable and potentially unstable land within the planning units. In addition, the ES designated units do not meet current RIC standards for terrain mapping on forest land. A complete re-inventory of terrain at the TSA level to obtain reliable overview slope stability terrain mapping is not possible with present available budget dollars. More cost effective approaches must be developed, tested and implemented to provide reliable slope stability maps for timber supply analysis and higher level planning
Strategic Resource Plans
Improved recognition/identification of unstable terrain, classification of unstable terran, terrain stability mapping and the combined use of test analytical models for stability mapping will improve implementation of resource management plans through providing cost effective terrain stability maps over large land areas Eg. requirements for North coast TSA review?

Cross Reference to Management Unit Issues (if applicable):

4.3.7.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
Knowledge is required in term of the recognition and understanding of the internal and external factors that control and determine slope stability and how contributing factors are linked to forest management practices. The recognition of unstable terrain (describing and characterizing) is necessary to develop and refine mapping methodology and to identify field indicators of slope instability. Qualitative and quantitative analytical methods need to be developed or refined that will enhance the input of slope stability hazard and risk information into forest planning. Methods and tools need to be presented in guide books for field recognition of unstable sites.

Status of Existing Knowledge:
Landslide research has established that hillslope failures are a problem related to harvesting and road building. At the present time a much greater effort is required to develop solutions or solve problems related to management of landslide-prone terrain. Guide books, keys and methodologies developed for hazard and risk assessment are limited—these need to be revised and updated. Present slope stability mapping methods rely on professional judgement in that little quantitative terrain attribute information is available. Analytical methods and computer models developed for forest land use have not been tested/modified and applied to forest land planning.

Required Knowledge-Building Activities in these Areas (as applicable):

- Research is required in: landslide investigation of contributing factors, terrain attributes for describing and characterizing unstable terrain, and precipitation thresholds during rain storms and wet soil conditions. Base level research once completed must be presented in updated FPC guidebooks, field guides and forest industry training session.
- Analytical methods and computer models (GIS application) need further development and testing in different geological/geographic settings to use for forest planning.

Define Performance Indicators, Targets & Milestones:

- Terrain attribute studies for geographically distinct areas to: identify field indicators of slope instability and develop quantitative landslide-terrain attributes on landslide frequencies and on terrain factors contributing to landslides.
- The development and testing/calibration of analytical methods and computer models (eg. SINMAP North coast).
- Landslide investigation to understanding contributing factors in relationship to forest management practices.
- Guide books: description of landslide types in forest environments: process recognition and description.
- Precipitation thresholds for landslides based on the collection and analysis of real time data (rainfall/ precipitation, runoff, soils, water balance) and through the analysis of storms related to historical slope failures
- Risk analysis method development applicable to forest land management.

Relationship to Other SSFM Knowledge Strategies (if applicable):

Cross Reference to Management Unit Activities: Re722118, Re722047, NC4.

4.3.7.3 Description of Activities

Region

SSFM Issue #: 3.12	**Activity: Terrain Stability Mapping**	**Activity #:722047**

Summary:
Scope and implementation plans.

i. Test and calibrate Slope stability index approach to terrain stability mapping(SINMAP) in different geologic geographic settings and its applicability for use in forest management planning and timber supply analysis
ii. Project study areas are located at Chambers Creek, Kaien Island, Baker Inlet and Triumph Bay within the North Coast Forest District. Future projects are to cover selected geographic settings through out the Prince Rupert Forest Region.

Status:
Existing and ongoing research to develop quantitative landslide-terrain attribute and geotechnical information on landslides to improve terrain stability mapping classification and terrain stability assessments.

Objectives:

- To identify field indicators of slope instability and to develop quantitative landslide-terrain attributes on landslide frequencies and on terrain factors contributing to landslides;
- To calibrate the terrain stability mapping classification, use by the forest industry; and
- To provide geotechnical information on landslides for engineering applications.

Tasks, Deliverables, Targets and Milestones:

i. Collection of terrain attribute and geotechnical information on existing and any new landslides within the Prince Rupert Forest Region;
ii. Preparation of research and extension reports to quantify the terrain stability mapping classification; and
iii. Provide data and reports for improved field recognition of unstable terrain.

Cost Sharing:

Partnerships:

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
20,000	1	50,000	50,000	50,000	50,000		220,000	5

SSFM Issue #: 3.12	**Activity: New analytical tools and models**	**Activity #:722118**

Summary:
Scope and implementation plans.

i. Test and calibrate Slope stability index approach to terrain stability mapping(SINMAP) in different geologic geographic settings and its applicability for use in forest management planning and timber supply analysis
ii. Project study areas are located at Chambers Creek, Kaien Island, Baker Inlet and Triumph Bay within the North Coast Forest District. Future projects are to cover selected geographic settings through out the Prince Rupert Forest Region.

Status:
Calibration and test trials of SINMAP will undertaken within the North Coast Forest District. Where applicable the trials will extend into other Forest Districts of the PRFR.

Objectives:

- To test and calibrate Slope Stability Index approach to Terrain Stability Mapping (SINMAP) in different geologic geographic settings and its applicability for use in forest management planning and timber supply analysis

Tasks, Deliverables, Targets and Milestones:

i. Completion of SINMAP trial and calibration for the selected study areas; and prepare a document describing methods, calibration requirements and potential problem and limitations of the model within the North Coast District.
ii. Complete a trial run of SINMAP on a portion of the north coast TSA
iii. Calibrate and run SINMAP in other Districts/ TSAs

Cost Sharing:

Partnerships:

Investment to date		Investment Required						Total Years to complete
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
26,000	2001/2	50,000	50,000	25,000	25,000			150,000

North Coast Forest District

SSFM Issue #: 3.12	**Activity: SINMAP**	**Activity #: NC04**

Summary:

- The District will have the terrain stability calibration modelling completed for 5 study areas by August of 2001. It is proposed to complete an audit on the resulting terrain stability coverage. This will provide both Licensees and the Chief Forester with the confidence levels they need when addressing reductions to the THLB.
- The audit will be conducted on 32 random plot location within the District.

Status:

Even though the audit is new, the process in determining the terrain classifications will be in its third and final year.

Objectives:

The objective of this proposal is to close the knowledge gap we currently have on reductions to the THLB.

Tasks, Deliverables, Targets and Milestones:

- The final report will be completed after all plot information has been compiled from the field audit.
- The report will be submitted by August of 2002.

Cost Sharing:

MYA holders are expected to provide the funding while the MoF will provide the staff and expertise.

Partnerships:

Partnerships and commitments will be designated once funding approval has been established.

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
96,780	1	32,000					32,000	2

4.3.8 Issue 3.13--What are the best management practices around unclassified streams based on existing stream inventory information?

4.3.8.1 Description of Issue

Overview Description of the Regional Strategic Issue:
The Forest Practices Code's (FPC), Fish-Stream Identification Guidebook (FSID) requires all stream reaches be inventoried to determine fish presence or absence using appropriate and acceptable methods. Stream reach classification using methods other than field based inventory can be achieved under a Local Area Agreement (LAA) as described in the FSID (Pg. 38). It is the purpose of Issue 3.13 to determine what is an acceptable and appropriate inventory in lieu of reach by reach field inspection for all stream reaches. Presently, the FSID does not provide detail for LAAs, which are designed and negotiated by Regional and District, Ministry of Environment Lands & Parks (MELP) staff with proponents.

Relationship to Sustainable Forest Management:

i. The maintenance of environmental values

Resident fish communities, water quality and habitat are generally at greatest risk to disturbances associated with riparian management practices, including stream crossings. Increased knowledge of fish distributions within watersheds assists in the compliance with the FPC as well as best management practices in and around riparian areas , in an attempt to reduce the negative effects of forest management/harvesting in riparian areas.

ii. The sustainable use of timber resources

The greatest risk to timber supply is the unnecessary retention (under the FPC) of timber resources within the riparian management area of small streams managed as **fish present** (S1-S4), when fish may not be present. Increased knowledge on the distribution of fish within small streams and the creation of general rules that predict fish distribution, are repeatable, and scientifically defensible, would reduce the uncertainties related to the default fish bearing classification. Increased fish distribution knowledge would also contribute to the knowledge base required to assess the impacts of best management practices in riparian areas as required by some higher level plans (eg. LRMPs).

iii. The sustainable use of non-timber resources

The greatest risk to non-timber resources includes the destruction or deterioration of aquatic habitat in small streams, as well as those habitats located downstream. This could result in extirpation of resident fish populations, or anadromous stocks on a localized scale. Better knowledge on fish distribution and use of small stream habitats would assist greatly in increasing certainty of the effects of management decisions.

Relationship to Strategic Resource Plans and Decisions:

Strategic Decisions

The creation of LAAs will not improve the upcoming TSR unless customized analysis are conducted on a District basis to evaluate the impacts on timber supply. However, tools used to collect the knowledge necessary to generate the LAA will be directly applied to TSR (eg. 1:20k Fish & Fish Habitat Inventory (FFHI), Fish Habitat Assessment Tool (FHAT20)).

Strategic Resource Plans

LRMPs may delineate specific strategies for objectives related to fish species or populations present in Forest Districts, watersheds or stream reaches. Therefore, guidance of non-fish bearing reach delineation may help focus inventory effort on reaches or watersheds, defaulted to fish bearing or that have a high probability for species of interest being present.

Cross Reference to Management Unit Issues (if applicable):

Re1.32. Use of the TRIM base for TSR will allow the implementation of 1:20k FFHI inventories for the use of the effects of stream class on the TSR.

Re3.11. Knowledge of location of non-fish bearing and fish bearing streams will assist in the efforts to manage harvesting in context of protecting stream quality.

Re3.13 A. Regional analysis of 1:20k FFHI, FDIS data currently on file on a watershed group scale.

Reach types (eg. gradient class, stream size, distance upstream, elevation) in which fish were never present following sampling would be identified.

Re3.13 B. FHAT20 analysis of 3rd order or greater watersheds with FDIS 6.4 or greater data and 1:20,000 scale watershed codes. Watersheds could be selected based on MELP Habitat & Fisheries section priority watersheds with fish habitat protection concerns.

Projects identified above could be completed at a watershed or District scale. They were identified in 2000/01 RMP and were not initiated by industry or Region.

Kispiox FD could have identified the need for such activity to assist with the implementation of the Kispiox LRMP.

4.3.8.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
Implementation of this knowledge strategy involves the use of existing fish and fish habitat inventory information. Use of existing information collected and stored using Resource Inventory Committee (RIC) standards will result in greatest efficiencies.

Status of Existing Knowledge:

i. Organization, synthesis and analysis:

The Ministry of Fisheries, Planning & Information Branch has developed an analysis tool (FHAT20) that will permit the evaluation of existing data to address Issue 3.13. However, FHAT20 is limited in its application to watershed units, not Forest Districts or Regions. New tools, incorporating the methods and approaches used in FHAT20 on larger scales are being developed by BC Min. of Fisheries and various IFPA initiatives across the province (eg. Arrow FD, Lakes/Morice FDs).

ii. Inventory:

RIC, 1:20k Fish & Fish Habitat Inventories (FFHI) exist within the timber licensed areas of the Prince Rupert Forest Region. An approximate estimate of 70% of FRBC funding recipients (industry) timber supply areas within the Prince Rupert Forest Region have been inventoried at the 1:20k reconnaissance level.

iii. Extension:

FFHI collected to RIC standards will be readily available in MS Access formats. Some of the data collected is now available over the internet or in the form of Oracle tables and queries (eg. Fish Wizard). Other data formats collected by various forest companies exist and will generally be in less usable forms. However, these data are considered to be localized.

iv. Research:

Pilot FHAT20's have been conducted on selected watersheds in R6 (eg. Gosnell Creek WS), however, industry has not proceeded with using the available analysis tools for LAA development or strategic planning. The Lakes/Morice IFPA certification process will see the development of a database that will incorporate 1:20k FFHI data for the use in strategic planning.

v. Monitoring:

Two low risk LAAs are in place currently, but have not been evaluated to date. They are not based on analysis of existing 1:20k RIC data, rather delineate agreements between parties regarding alternate sampling methodologies.

Required Knowledge-Building Activities in these Areas (as applicable):

i. Organization, Synthesis, Analysis:

Required knowledge and analysis tools already exist to address the issue (eg. FHAT20).

ii. Resource Inventory:

RIC 1:20k Reconnaissance Fish & Fish Habitat Inventory; other operational (1:5k FPC) fish inventories can be incorporated.

iii. Extension:

Fish Habitat Assessment Tool v2.0 or data analysis similar to that suggested in the Skeena Region Guidelines for LAA Preparation.

iv. Research:

Alternative quantitative analysis methods may be developed to determine that fish are not present in identifiable habitat types; however, this is a low priority as a proven analytical method already exists (FHAT20). Development of Guidelines for best management practices around non-classified stream or (s4-s6) would assist in achieving protection for non-timber resources.

v. Monitoring:

Monitoring is conducted annually in accordance with each local area agreement. Monitoring can also be achieved through LRMP implementation & effectiveness monitoring processes.

Define Performance Indicators, Targets & Milestones:

1. Number of watersheds inventoried using RIC 1:20k FFHI methodology and results analyzed using FHAT20 or other means and interpreted for rules based fish distribution;
2. number of reaches/watershed units classified using alternative means;
3. area of timber harvested as a result of classification that would have otherwise been defaulted S1-S4;
4. number of reaches/watershed units provided with adequate protection for non-timber resources.

Relationship to Other SSFM Knowledge Strategies (if applicable):

Completion of projects related to Issue 3.13 require completion of RIC, 1:20k FFHI, Phase 1-3 at a minimum in order to conduct an FHAT20 analysis.

Cross Reference to Management Unit Activities:

4.3.8.3 Description of Activities

No activities which principally address this issue have been proposed at this time.

4.3.9 Issue 5.11--How do we increase the participation of First Nations in the local forest sector economy?

4.3.9.1 Description of Issue

Overview Description of the Regional Strategic Issue:
Across the Prince Rupert Forest Region, there are varying levels of participation in the Forest Sector by First Nations Communities. The reasons for this are numerous and revolve around "readiness" and opportunity.

The issue around "readiness" is and can be addressed by both training and capacity building. These issues are also addressed through the Interim Measures Agreements, Tripartite Agreements such as the Protocol Agreement with the Wet'suwet'en First Nation as well as local Bands and Native Development Corporations (i.e. BLNDC).

The level of "readiness" differs by community. There are some Nations and communities that are at a point where their skill level is such that large opportunities can be carried out successfully. There are other communities where the knowledge and skill level needs to be improved prior to engaging in forest operations.

The challenge of this "issue" lies around gauging where resources can be the most effective.

MoF has developed a First Nations Forest Strategy that was approved in principle by Cabinet in November 1999. Objectives of the FNFS are to increase aboriginal involvement in forestry from a capacity and business perspective; develop cooperative relationships and business arrangements between First Nations, governments and industry; and to provide incentives to resolve treaties. Efforts in the region to address this issue will be consistent with and feed into the provincial strategy.

For the purposes of developing a regional strategy to address this issue, First Nations involvement in the forest economy is broken into 6 main categories:

1. First Nations Capacity Building: The need to build First Nations underlies all initiatives aimed at increasing First Nations involvement in the forest sector. An understanding of a First Nation's internal capacity is essential if initiatives are to be successful.
2. Cultural Heritage Resource Management: First Nations want a role in identifying traditional use and archaeology sites (including CMTs) on the ground and in determining how these sites are considered in forest development plans.
3. Involvement in Planning: Opportunities to expand First Nations involvement in planning beyond the legal obligation to consult on the FDP can benefit all parties. Including First Nations in planning at a more strategic level during Landscape Unit Planning and in the development of FDPs can be extremely helpful in fostering better working relationships, and in effectively dealing with First Nations concerns and interests.
4. Non-Timber Forest Products (NTFP): Increasingly First Nations are looking to developing markets and business ventures for NTFPs. Development of NTFPs provide an opportunity for First Nations to derive economic benefits from the forests without getting into the business of logging.
5. Joint Ventures: Development of partnerships between industry and First Nations is an excellent means for increasing First Nations stake in the forest economy while at the same time providing First Nation with access to specialized skills and know-how, marketing and managerial services. Many incentives already exist for industry to partner with local First Nations. Additional incentives are required in order to facilitate more joint ventures between industry and First Nations.
6. Access to tenure: Access to timber harvesting rights remains the key goal of many First Nations and a chief incentive for industry to form partnerships. A fully committed AAC and legislative constraints hamper MoF's ability to make new tenures available to First Nations.

Relationship to Sustainable Forest Management:
The relationship to the SSFM is the opportunity for developing and implementing strategies that incorporate

First Nations in SSFM programs. Key concerns should be around:

- Development of knowledge base and opportunities in Non-timber Forest Products
- Mentor programs to help coach First Nations based forest operations in the areas of both technical competence as well as business management
- Help develop opportunities for those First Nations entrepreneurs through a participative and facilitative framework working with licensees and the Ministry of Forests as a mutually beneficial partnership
- **Provide opportunities for** training **and development**

Relationship to Strategic Resource Plans and Decisions:
Filling the knowledge gaps that exist will facilitate further business partnership or Joint Venture opportunities. The benefits would include:

- Diversity and local First Nations involvement in Forest Operations
- Increased capacity for First Nations to carry out work under SSFM
- Open doors for future career opportunities

Cross Reference to Management Unit Issues (if applicable):

4.3.9.2 Knowledge Strategies

Overview Description of the Knowledge Strategy:
The knowledge strategy is based both on identifying gaps where we can expand our efforts and an inventory of existing knowledge.

Status of Existing Knowledge:

1. First Nations Capacity Building

- First Nations Forest Technician Training Program is being expanded to take on more students and new curriculum being developed to provide business skills training.
- 7 students have been sponsored by licensees or districts in region: Wet'suwet'en/PIR; Gitxsan/SCI (2); Gitanyow/Bell Pole; LaxKwaalaams/Interfor (2); Wet'suwet'en/Bulkley District
- Job shadowing initiatives have occurred on an adhoc basis within some districts subject to available financial resources and staff commitment
- First Nations Lands and Resource Capacity Project underway in Burns Lake to deliver training to local First Nations with the goal of enhancing First Nations ability to operate and participate in forest based businesses, partnerships or joint ventures leading to community economic development.

2. Management of Cultural Heritage Resources

- 7 TUS completed/6 ongoing/at least 4 remaining to be done in region (see attached table)—access and use of information in planning remains ongoing issue-- Very little strategic planning for how to manage for traditional/sustenance use in forestry operations.
- All districts have AOA or some form of archaeological site potential mapping complete—additional inventory and field testing is required in most cases to make the potential mapping meaningful for use in operational planning.
- First Nations personnel are increasingly being hired by licensees to assess blocks for presence of cultural heritage resources.

3. Involvement in Planning

- MoF/Wet'suwet'en strategic planning pilot project to identify and map Wet'suwet'en interests by landscape unit is ongoing—development of data exchange agreements and management strategies for trails and other cultural heritage resources is required.

4. Non-Timber Forest Products

- Pine Mushroom management project underway with Gitanyow
- Berry management pilot project underway with Gitxsan
- Cultural/Eco-tourism opportunities are being explored by some First Nations

5. Joint Ventures

- Aside from large scale joint ventures tied to tenure, there is little documentation on smaller scale (but no less important) business arrangements between industry and First Nations within the region.

- Wet'suwet'en Accord may result in a model for industry/First Nation to bring potential joint ventures forward with incentive proposals for consideration by governments

6. Access to Tenure

- Existing tools for providing First Nations access timber include Free Use Permit (up to 250 m^3 for traditional cultural purposes); Direct Award timber sales (up to 500 m^3); SBFEP registration and participation; SBFEP salvage activity; Woodlot License, Forest License, community forest agreements
- There are currently 18 forest tenures held in whole or in part by First Nations within the region (see attached table) (this does not include direct award sales or FUPs)
- Crown's social and economic development objectives for new forest tenures often now include objectives aimed at encouraging First Nation employment and participation in the forest sector.

Regional tenure opportunity analysis and strategy development are underway.

Required Knowledge-Building Activities in these Areas (as applicable):

1. First Nations Capacity Building

- Training needs analysis on a community by community basis
- Provision of business advise and expertise to First Nations to access existing or developing business opportunities.
- Training programs for First Nations in both in business and technical forestry skills
- "Job shadowing" and mentoring programs/initiatives that encourage partnerships and build capacity

2. Management of Cultural Heritage Resources

- Completion of traditional use studies (TUS) throughout region
- Data sharing agreements to access traditional use information for forestry planning purposes
- AIA contracts that require consulting archaeologists to hire and train local First Nation field assistants when conducting AIAs.
- Better models for predicting archaeological site potential that incorporate First Nations TUS information
- District CMT policies that encourage CMT surveys by trained First Nations personnel in early stages of planning and block layout
- Cultural heritage resource site recognition training for Licensees, MoF staff and First Nations
- Inventory of cultural trails and development of trail management strategies

3. Involvement in Planning

- new models for First Nations involvement in strategic planning
- data sharing agreements that provide licensees and districts access to traditional use information and traditional ecological knowledge in exchange for FN access to other mapping products (eg. forest cover, TRIM, digital FDPs)
- means for collecting and incorporating traditional ecological knowledge into forest planning
- development of tools to manage for traditional sustenance activities in forest planning (eg., berry gathering, access to totem/canoe quality cedar).

4. Non-Timber Forest Products (NTFP)

- Market research/feasibility studies
- Inventories/habitat suitability mapping (eg., berries, mushrooms, medicinal plants)
- Development of management strategies for NTFP both on and off the timber harvesting landbase

5. Joint Ventures

- Better documentation of existing business, training and employment relationships between First Nations and forest industry is needed to provide a benchmark from which further progress can be measured
- Forums for acknowledging existing relationships, sharing lessons and providing support and encouragement for development of new joint ventures
- Industry in-house training for staff on aboriginal issues and culture to promote greater sensitivity and understanding of First Nations needs and aspirations.
- Facilitators to bring partners together and broker business relationships
- Strategic negotiations with First Nations to identify and implement joint venture incentives where there is a potential partner and/or tenure opportunity.

6. Access to tenure

- Policy flexibility and legislative changes likely required in order to substantially increase ability for First Nations to acquire timber tenures.
- Enter Interim measure negotiations with First Nations where: there is support from industry and adjacent communities; there is a potential tenure opportunity available; and there is high probability of a successful venture resulting.

Define Performance Indicators, Targets & Milestones:
It is very difficult to define performance indicators or milestones in this strategy. Projects are met with uneven success rates. The key to the "success" of this issue is to build relationships, provide opportunities, and coach, mentor and facilitate economic development opportunities.

Projects aimed at increasing First Nations participation in local forest economy in the near term should address the following criteria:

- Build relationships/partnerships between industry, First Nations and local community;
- Build First Nations capacity to participate in the forest sector economy;
- Provide jobs for First Nations in forest sector;
- Wherever possible, support strategic negotiations with First Nations aimed at pursuing joint venture or tenure opportunities or achieving increased certainty on the land base

Cross Reference to Management Unit Activities: La5, KaB.

4.3.9.3 Description of Activities

Lakes Forest District

SSFM Issue #: 5.11 **(1.32, 1.33)**	**Activity: First Nations Mapping**	**Activity #: La6**

Summary:

i. overview of tasks
- Update Lakes Archaeological Resource Plan (LARP) with new AOA, TUS and AIA data in IGDS format
- Translate to ARCINFO format.

ii. overview of geographic area covered (i.e., management units, entire region)
- Lakes District

Status: Existing

Objectives:

Lakes District realizes the importance of First Nations involvement in many aspects of our Forestry work. To facilitate an effective model for First Nation involvement in the local forest sector, Lakes District began work on the Lakes Archaeological Resource Plan (LARP) in 1998. The LARP attempts to capture all attribute and spatial data relevant to our First Nations, including AOAs, AIAs, TUS, etc. This data provides a basis for meaningful First Nations input beginning at the Strategic Planning stage. In the past, knowledge gaps in our First Nation data have been operationally expensive.

To increase the participation of First Nations in our local forest sector economy, it is important to have a map of their history.

The LARP is complete collection of all First nations spatial and graphic data, resulting from Traditional Use Studies (TUS), Archaeological Overview Assessments (AOA), Archaeological Impact Assessments (AIA) and other sources.
Other high priority issues addressed by this activity include: 1.32 & 1.33.

Tasks, Deliverables, Targets and Milestones:

i. Specific products and expected outcomes.
- LARP will be used in ARCINFO format at the strategic planning level. This will reduce the number of conflicts experienced at the operational level

ii. Completion dates.
- Update LARP data in-IGDS format: 6 months June 2002
- Translation of updated IGDS file to ARCINFO format : 6 months December 2002

Cost Sharing:
Babine Forest Products (BFP) Fraser Lake Sawmills (FLSM) and Canfor Forest products

Partnerships:
FRBC MYA Babine Forest Products (BFP) Fraser Lake Sawmills (FLSM) and Canfor Forest products

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		20,000					20,000	1

Kalum Forest District

SSFM Issue #: 5.11	**Activity: Archaeological Overview Assessment**	**Activity #: KaB**

Summary: The plan is to cover priority areas of TFL 1, A16835 and Small Business Chart Areas.

Status: New

Objectives:
Government commitment to protect First Nations archaeological values from disturbance.

Tasks, Deliverables, Targets and Milestones:

i. Maps: 1:20,000 scale showing archaeological values .
ii. March 31, 2003

Cost Sharing: Cost sharing with SBFEP is being discussed.

Partnerships: As above

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
0		150,000					150,000	1

4.3.10 Off-Strategy Activities

4.3.10.1 Description of Activities

Kalum Forest District

SSFM Issue #:	**Activity: Small Wood Utilization**	**Activity #: Ka 13**

Summary:
There are second growth stands in the Kalum are reaching the optimum size for commercial thinning. Existing local mills cannot utilize the small logs. Without a local mill the economic potential of commercial thinning cannot be developed. There is a need to research the appropriate design for a small wood mill for the Kalum Forest District.

Status: Off strategy

Objectives:
To research the appropriate design for a small wood mill for the Kalum Forest District.
Although not the primary issue, this project may address issue 5.11.

Tasks, Deliverables, Targets and Milestones:

Cost Sharing:

Partnerships:

Investment to date		**Investment Required**						**Total Years to complete**
$$	Years	$$ 2002/03	$$ 2003/04	$$ 2004/05	$$ 2005/06	$$ 2006/07	$$ Total	
		35,000	35,000				70,000	2

4.4 *Summary of Regional Investment Recommendations*

The first table summarizes potential projects of a Regional nature. These are a combination of ongoing and new projects. The following tables are project summary tables for each District from the Lakes Forest District to the North Coast Forest District.

4.4.1 Regional Projects

SSFM Issue #	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Years	$$ 02/03	$$ 03/04	$$ 04/05	$$ 05/06	$$ 06/07	$$ Total[6]		
1.12	ReA	Workshop-landscape modelling	E, U	N	R	TSR, RMP, LUP	2003	RIP	4,500	1	18,000	18,000	0	0	0	40,500	3	
	ReB	Workshop-successional pathways	E, U	N	R	TSR,LRMP, LUP	2003	RIP	4,500	1	18,000	18,000	0	0	0	40,500	3	
	ReC	Workshop-NDT data models	E, U	N	R	TSR, RMP, LUP	2003	RIP	4,500	1	18,000	18000	0	0	0	40,500	3	
	ReD	Workshop-indicators of biodiversity conservation	E, U	N	R	TSR, RMP, LUP	2003	RIP	4,500	1	18,000	18000	0	0	0	40,500	3	
1.23, 3.11	Re	S4 - S6 stream protection performance measures update and decision process integration		E	R	SLUP, LUP, licensee certific.	2004	RIP	>500K	5	100,000	100,000				200,000	2	
1.33	Re	data sharing	E,U	E	R,P		2005	RIP	75,300	1	100,000	100,000	300,000				3	H
2.21	Re	Various	E, U, N	E			2008	LUCO,H CTF, RIP	2,000,000	5	750,000	750,000	750,000	750,000	750,000	5,750,000	10	
3.12	Re72 2118	Terrain Stability Mapping	E,U,N	E	R	TSR, RMP, LUP	2005		20,000	1	50,000	50,000	50,000	50,000	0	220,000	5	
3.12	Re72 2047	New analytical tools and models	E,U,N	E	R	TSR, RMP, LUP	2005		26,000	1	50,000	50,000	25,000	25,000	0	176,000	5	
										TOTAL	1,122,000	1,122,000	1,125,000	1,125,000				

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[1] Type of knowledge investment categories: E = (Organization, Synthesis, Analysis of Existing Info), U = (Tools, Applications, Extension to Enhance Use of Existing Information) N = (Field Inventory or Research)

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total.

4.4.2 District Projects

4.4.2.1 Lakes Forest District

SSFM Issue #	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Years	$$ 02/03	$$ 03/04	$$ 04/05	$$ 05/06	$$ 06/07	$$ Total[6]		
2.21	La1	Sensitive Wildlife Studies	N	E	DLA/DMO	TSR III/LUP	2006	IFPA	330,000	3	190,000	190,000	80,000	80,000		870,000	8	1
1.23	La2	Fish Stream Habitat Inventory	N	E	DLA	TSR III/LUP	2003	NONE	700,000	6	200,000					900,000	7	4
1.32	La3	VRI	N/U	E/N	DLA	TSR III/LUP	2005	NONE	1,500,000	2	600,000	600,000	?	?		2,700,000	6	2
1.32	La4	PEM/TEM	N/U	N	DLA	LUP	2006	NONE				500,000	300,000	200,000		1,000,000	3	3
5.11	La5	First Nation Information Update	U	N	DLA		2003	NONE			20,000					20,000	1	5
2.21	La6	Sensitive Wildlife Studies*	N	E	DLA/DMO	TSR III/LUP	2006	IFPA			80,000	80,000	80,000	80,000	80,000	400,000	7	6
		* If additional funding becomes available, the sensitive wildlife studies project requires more funding to study and prepare strategies for additional identified wildlife species.																
									TOTAL		1,090,000	1,370,000	460,000	360,000	80,000			

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[1] Type of knowledge investment categories: E = (Organization, Synthesis, Analysis of Existing Info), U = (Tools, Applications, Extension to Enhance Use of Existing Information) N = (Field Inventory or Research)

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total.

4.4.2.2 Morice Forest District

SSFM Issue #	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Years	$$ 02/03	$$ 03/04	$$ 04/05	$$ 05/06	$$ 06/07	$$ Total[6]		
2.21	Mo2	Mtn Goat response to forest development	N	E	3 MU R	Plan	2003	MYA	305,000	4	85,000	50,000				440,000	6	H1
2.21	Mo3	Goshawk Nest Inventory and Monitoring	N	E	3 MU R	Plan	2005	MYA	275000	3	50,000	50,000	35,000			410,000	5	H2
1.32	Mo5	Telkwa Caribou Recovery Project	N	E	3 MU R	Strategic Plan	2005	MYA	225000	4	60,000	50,000	50,000			385,000	5	M
2.21	Mo6	Validation & detailing of Grizzly Bear habitat suitability mapping	N, E	E	1 MU R	Strategic Plan	2002	HRMP?	45000	1								L
1.23	Mo7a /b	Fish and Fish Habitat Inventory	N	E	1 MU R	Plan	2004	MYA	1404000	4	280,000	180,000				1,864,000	6	H3
3.11	Mo12	Temperature Sensitive Streams	N	E	1 MU R	Strategic Plan	2004	RE	56000	2	35,000	30,000				121,000	4	M
1.32	Mo15	Orthophotos	N	E	1 MU R		2003	MYA	300000	1	50,000					350,000	2	H4
1.32	MoA	VRI	N	N	1 MU R	Plan	2003	MYA	0	0	400,000	400,000	400,000	400,000	400,000	2,000,000	5	H5
2.21	MoB	Bull trout Inventory	N	N	1 MU R	Plan	2003				20,000	38,000	38,000	38,000	38,000	172,000	5	H6
1.32	MoC	Watershed Assessment	N	N	1 MU R		2002											
									TOTAL		920,000	748,000	473,000	438,000	438,000			

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[1] Type of knowledge investment categories: E = (Organization, Synthesis, Analysis of Existing Info), U = (Tools, Applications, Extension to Enhance Use of Existing Information) N = (Field Inventory or Research)

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total

4.4.2.3 Bulkley TSA

SSFM Issue #	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Years	$$ 02/03	$$ 03/04	$$ 04/05	$$ 05/06	$$ 06/07	$$ Total[6]		
1.23	Bu 4	1:20k Fish	N	E	1 MU	SLUP,TSR	2005	RIP	648,000	5	200,000	150,000	0	0	0	350,000	7	1
2.21	Bu14	Caribou Recovery	E	E	R	LRMP, LRUP, TSR	2005	RIP, HCTF	231,000	4	50,000	50,000	50,000			381,000	7	2
1.32	Bu8	TSM	N	E	1MU	SLUP,TSR	2005	RIP	338,931	4	70,000	0	0	0	0	70,000	5	3
1.21	Bu3	PEM	E	N	1MU	SLUP,TSR	2005	RIP	35,000	1	80,000		0	0	0	115,000	2	4
3.11	Bu11	IBI	U	E	1MU	SLUP,TSR	2005	RIP	40,000	2	30,000	30,000	30,000	0	0	130,000	5	5
1.32	Bu9	Upper Operablility	E	E	1 MU,R,P	SLUP,TSR	2005	RIP	136,076	3	30,000	0	0	0	0	166,076	4	7
1.21	Bu7	Spatial Modeling	E,U	E	1MU	SLUP,TSR	2005	RIP	35,000	2	50,000	50,000	0	0	0	135,000	4	8
2.21	Bu 17	Babine grizzly	N	E	R, P	LRMP, LRUP,	2005-2006	RIP	165,000 Kispiox	1	16,000 Bulkley	16,000 Bulkley	16,000 Bulkley	?		48,000	4-5	10
2.21	Bu	Bulkley FD BT Species Inventory	N	N	3	LRMP	2004	RIP/WLAP	0	new	70,000	40,000				110,000	2	11
									TOTAL		596,000	336,000	96,000	0	0			

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[1] Type of knowledge investment categories: E = (Organization, Synthesis, Analysis of Existing Info), U = (Tools, Applications, Extension to Enhance Use of Existing Information) N = (Field Inventory or Research)

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total

4.4.2.4 Kispiox Forest District

SSFM Issue #	Activity				Benefits			Potential source of funding[5]	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Years	$$ 02/03	$$ 03/04	$$ 04/05	$$ 05/06	$$ 06/07	$$ Total[6]		
2.21	Ki6-H01	Goshawk Adaptive Management Trial	N, E	E	P	TSR, LRMP, LUP, IWMS	2004	RIP	527,000	4	60,000	60,000	60,000	60,000		767,000	8	H
2.21	Ki6-H02	Wildlife Habitat Suitability Model	U, E	E	Kispiox	TSR, LRMP, IWMS, LUP	2003	RIP	78,835	2	50,000					128,835	2	H
2.21	Ki6-H03	Grizzly Bear Habitat Use in the Babine watershed (collaring)	N	E[7]	Kispiox	IWMS, LRMP, LUP	2006	RIP	165,000	1	235,000	235,000	185,000	?		870,000	5	H
1.23	Ki5-H04	Fish and Fish Habitat Inventory	N	E	Kispiox	TSR, LRMP, LUP	2006	RIP	675,00	4	125,000	125,000	125,000	?		1,050,000	8	H
1.23	Ki3-H05	Index of Biological Integrity for Water Quality	E	E	R	LRMP, LUP	2003	RIP			15,000	15,000				30,000	2	H
2.21	Ki6-H06	Monitoring Grizzly Bear Presence in the Nangeese river watershed (hair samples)	E, N	N	Kispiox	IWMS, LRMP, LUP	2005	RIP			50,000	50,000	50,000			150,000	3	H
2.21	Ki6-H07	Bull Trout Studies	N	N	Kispiox	IWMS, LRMP, LUP	2005	RIP			50,000	50,000	50,000			150,000	3	H
									TOTAL		585,000	535,000	470,000	60,000				

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[1] Type of knowledge investment categories: E = (Organization, Synthesis, Analysis of E. Info), U = (Tools, Applications, Extension to Enhance Use of Existing Info) N = (Field Inventory or Research)

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total.

[7] Year one of this project is funded through the wildlife suitability model activitiy.

4.4.2.5 Kalum Forest District

SSFM Issue #	Activity				Benefits			Potential source of	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Years	$$ 02/03	$$ 03/04	$$ 04/05	$$ 05/06	$$ 06/07	$$ Total[6]		
1.32	Ka1	TRIM II	U	E	district	LRMP	2003	FRBC	150,000	1	300,000					300,000	1	H
1.32	Ka2	G Bear	N	E	district	LRMP	2004	FRBC	75,000	3	30,000	30,000				135,000	5	H
1.32	Ka2	Ungulkate WR	N	E	district	LRMP	2003	FRBC	75,000	3	35,000					110,000	4	H
1.32	Ka2	Mushroom	N	E	district	LRMP	2004	FRBC			15,000	25,000				40,000	2	M
1.32	Ka2	Hardwood	N	E	district	LRMP	2004	FRBC			25,000	30,000				55,000	2	M
1.32	Ka2	Red & Blue	N	E	district	LRMP	2004	FRBC			25,000	40,000				65,000	2	M
1.32	Ka2	PEM	N	E	district	LRMP	2003				180,000					180,000	1	H
1.32	KaA	VRI	N	E	district	LRMP	2003				275,000					275,000	1	H
1.23	Ka4	Fish & Habitat	N	E	district	Op Plan	2003		135,000	2	135,000					270,000	3	H
1.33	Ka7	Op Trials	N	E	district	Op Plan	2003				10,000					10,000	1	M
5.11	KaB	AOA	N	N	district	Op Plan	2003	FRBC	0		150,000					150,000	1	H
Off-Strt	Ka13	Small Wood	N	N	district	plans	2003				35,000	35,000				70,000	2	H
										TOTAL	1,215,000	160,000	0	0	0			

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[1] **Type of knowledge investment categories: E = (Org., Synthesis, Analysis of E. Info), U = (Tools, Applications, Extension to Enhance Use of E. Info) N = (Field Inventory or Research)**

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total.

4.4.2.6 North Coast Forest District

SSFM Issue #	Activity				Benefits			Potential source of	Investment to Date		Investment Required						Total # of years to complete	Priority
	#	Name	Type[1]	Status[2]	Scope of Benefits[3]	Strategic Decision or Plan[4]	Required end date		$$	Years	$$ 02/03	$$ 03/04	$$ 04/05	$$ 05/06	$$ 06/07	$$ Total[6]		
1.32	NC1	HyP3	N	E	TSA	TSR3	2005	HRMP	193,270	5	26,500	39,200	22,300	0	0	88,000	8	H
2.11	NC2	NC_PEM	N	E	TSA	TSR3	2003	HRMP	127,960	2	18,300	0	0	0	0	18,300	3	H
1.32	NC3	RCI	N	E	TSA	TSR3	2003	HRMP	44,200	1	58,200	61,200	0	0	0	119,400	3	H
3.12	NC4	NC_SINMAP	N	E	TSA	TSR3	2002	HRMP	96,780	1	32,000	0	0	0	0	32,000	2	H
1.32	NC5	vri	N	E	TFL25	TSR3	2004	RIP	60,000	1	180,000	200,000	200,000	0		640,000	4	H
2.11	NC6	Sibec for CWH vm	N	N	L	SLUP	2003	IFP	0		30,000					30,000	1	H
2.21	NC7	Murrelet Study	N	E	L	SLUP	2003	IFP	82,000	1	40,000					40,000	2	H
2.21	NC8	Herring Habitat	N	N	L	SLUP	2003	IFP	0		75,000					75,000	1	H
2.21	NC9	Ungulate Habitat Assessment	N	N	L	SLUP	2003	IFP	0		75,000					75,000	1	H
1.32	NC10	Forest Cover	N	N	L	SLUP/TSR3	2003	IFP	0		60,000					60,000	1	H
1.33	NC11	Ecosystem Based Management	E	N	TSA,TFL	LRMP	2005	HRMP,IFP, WFP	0		65,000	20,000	20,000			105,000	3	H
									TOTAL		660,000	320,400	242,300	0	0			

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[1] **Type of knowledge investment categories: E = (Org., Synthesis, Analysis of E. Info), U = (Tools, Applications, Extension to Enhance Use of E. Info) N = (Field Inventory or Research)**

[2] E = Existing, N = New

[3] # of MUs, R = Region, P = Province

[4] Strategic decision process or implementation of plans: SLUP (i.e. Regional, LRMP), TSR2, TSR3

[5] Potential sources of funding: RIP (Resource Information Program), RE (Research Program), HRMP (Forest Renewal HQ Investment Plan), Ministries, Licensees, other

[6] Include existing investment in total.

4.5 Approval

SSFM RMP Final Documentation Sign-Off Form

Ministry of Forests

____ Date: _______________

Authorized Signatory

Ministry of Environment, Lands and Parks

____ Date: _______________

Authorized Signatory

4.6 SSFM APPENDICES

4.6.1 A. MANAGEMENT UNIT RMP CONTACT AND SUPPORT PERSONNEL

The RMP Contacts for the Prince Rupert / Skeena Regions include:

- Ruth Edwards, Ministry of Forests, Prince Rupert Forest Region
- Don Reid, Ministry of Environment, Skeena Region
- Bill Adair, Ministry of Forests, North Coast Forest District
- Marek Wasckiewicz, Ministry of Forests, Kalum Forest District
- Maggie Marsland, Ministry of Forests, Kispiox Forest District
- Bob Copley, Ministry of Forests, Bulkley Forest District
- Mike Buirs, Ministry of Forests, Morice Forest District
- Mark Price, Ministry of Forests, Lakes Forest District

Key people involved in the SSFM process included:

- Regional Strategic Team

Jim Snetsinger –Ministry of Forests, Prince Rupert Forest Region
Jim Yardly--Ministry of Environment, Skeena Region
Hugh Markides--BC Parks
Elizabeth Zweck--Land Use Coordination Office
Butch Morningstar --Regional Director FRBC
Mike Dunbar –Houston Forest Products Company, Houston, BC
Dan Tuomi –Skeena Cellulose Inc., Smithers, BC

- Advisory

Greg Rawling – Ministry of Forests, Prince Rupert Forest Region
Butch Morningstar – Forest Renewal BC, Skeena-Bulkley Region

- Regional Planning Team

Greg Rawling –Ministry of Forests, Prince Rupert Forest Region
Don Reid – BC Ministry of Environment, Skeena Region
Carl Vandermark, Canfor, Houston, BC
Archie MacDonald, Skeena Cellulose Inc., Terrace, BC
Ruth Edwards –Ministry of Forests, Prince Rupert Forest Region
Ian Sharpe, Ministry of Environment, Skeena Region
Dave Wilford, Ministry of Forests, Prince Rupert Forest Region
Paul Giroux, Ministry of Environment, Skeena Region
Darren Fillier, Ministry of Environment, Kispiox Forest District
Rick Braam, Ministry of Forests, Bulkley-Cassiar Forest District
Butch Morningstar – Forest Renewal BC, Skeena-Bulkley Region
Paul Perkins -- Forest Renewal BC,
Virginia Soehl, natural resources consultant, facilitator

4.6.2 B. REFERENCES SUPPORTING SSFM COMPONENT

Canadian Standards Association. 1996. A Sustainable Forest Management System: Guidance Document. 33 pp.

Forest Renewal BC. 2001. Guidelines for the Forest Renewal BC Strengthen Sustainable Forest Management Component. In: Resource Management Plan 2002/2003, Section 2.8. 35 pp.

4.6.3 C. ADDITIONAL HIGH PRIORITY PROJECTS FOR THE KISPIOX FOREST DISTRICT

Issue	Priority	Project	Type[1]	Status[2]	Scope[3]	Plans[4]	Year	Funding[5]	2002/03	2003/04	2004/05	2005/06	2006/07	Total[6]	Years to complete
Ki4	H08	New Aerial Photos (1:15,000)	N	N	Kispiox	TSR, LRMP, LUP	2003	RIP	$200,000					$200,000	1
Ki2	H09	OGMA & WTP Analysis	E	N	P	TSR, LRMP, LUP	2003	RIP	$20,000					$20,000	1
Ki2	H10	PEM & CWD requirements	U, E	N	Kispiox	TSR, LRMP, LUP	2003	RIP	$60,000	$15,000				$75,000	2
Ki1	H11	Satellite Imagery Acquisition	E	N	R	TSR, LRMP, LUP	2003	RIP	$18,000					$18,000	1
Ki2	H12	Seral Stage & Patch Size Distribution Assessment	E	N	Kispiox	TSR, LRMP, LUP	2003	RIP	$20,000					$20,000	1
Ki6	H13	Wildlife Habitat Supply Model	U, E	N	Kispiox	TSR, LRMP, LUP, IWMS	2003	RIP	$30,000	$30,000				$60,000	2
KI9	H14	Location of the Telegraph Trail	N	N	Kispiox	LRMP, LUP	2003	RIP	$25,000	$25,000				$50,000	2
Ki7	H15	Botanical Forest Product Habitat Model	N, U, E	N	R	TSR, LRMP, LUP	2003	RIP	$60,000	$20,000				$80,000	2
Ki9	H16	Recreation Strategic Plan	E	N	Kispiox	LRMP, LUP	2002	RIP	$15,000					$15,000	1
Ki2	H17	Structural Stage Model	U, E	N	Kispiox	TSR, LRMP, LUP	2005	RIP		$60,000	$15,000			$75,000	2

4.6.4 D. KISPIOX FOREST DISTRICT ISSUES--PREPARED AUGUST 2000

KISPIOX Forest District **ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT**

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
H, M, L with ranking (H1, M3)			Risk to environmental and forest resource values, potential contribution to increased certainty around forest management decision. Specific strategic decisions or land use plan implementation that the issue is affecting or in which there are opportunities to address the issue (including usefulness or relevance to the decision, urgency and timing for the decision it is intended to support).	Includes recommended activities and specific projects.	How will the knowledge lead to improvements in SSFM? What are the main benefits expected? How will the knowledge be used in specific forest management plans and decisions?	Specific targets and performance indicators of success.	Plan or process where issue has been identified, or where decision making would be improved.	Geographic scope of the issue.	
Ki1-H1	**MoF**	**1.32**	No reliable funding sources for updating forest cover inventory data. Forest cover inventory data (maps and database) is used as a basis for resource management decisions. Data must be current and accurate. Without current and accurate forest cover inventory information, important forest management decisions and processes such as AAC analysis and determination and landscape unit *planning* will not be reliable as they are based on the information contain in the inventory.	At a minimum, the forest cover inventory should be updated every 2 years and timed with the TSR process. Specific ways to ensure accurate forest cover disturbance update include: imagery acquisition (satellite imagery, orthophotos, aerial photos); use of GPS information; data exchange with licensees	Forest management decisions will be based on up-to-date and accurate forest cover inventory information (e.g. stand composition, age, height, volume, etc.). The inventory data is used as the main information source for projects and decisions related to LUP, LRMP implementation and TSR. As these plans and decisions integrate environmental, social, and economic values they are key in improving SFM efforts.	The forest cover inventory will be updated every two years for disturbances. To meet this target, new imagery will be acquired by December 2001 for the entire area of the Kispiox Forest District. Update will be completed by June 2002.	TSR, LRMP, LUP, FN	Provincial	Ki1-H05

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki2- H2	MELP	1.21	Inability to manage forest resources at the landscape level. The LRMP objectives for landscape level management are not yet implemented or met due to lack of critical knowledge. This increases the risk of habitat fragmentation, of loss in biological diversity, and has implications with regard to delivered wood costs.	Ecosystem management concepts and techniques will be implemented. This will allow retaining sufficient forest stand structure and wildlife habitat at a landscape level to satisfy biodiversity conservation objectives. Specific projects needed to implement the strategy include: • determining location of OGMAs and assessing WTPs requirements; • determining seral stages and patch size distribution and requirements; • determining connectivity corridor location and CWD requirements; • completing structural stage modelling; • completing PEM; and • Develop comprehensive LUP.	Together, these projects will allow the creation of landscape unit plans and objectives, and the development and implementation of TRP guidelines. This will be used in implementing the LRMP biodiversity objectives. These plans and guidelines integrate environmental, social, and economic values that are key in improving SFM efforts. Conservation of biological diversity is an identified criterion of SFM and many of the proposed projects can be used as indicators of SFM.	The success of the strategy is strongly dependent on the completion of the following projects: OGMAs and WTPs objectives will be prepared; seral stage and patch size distribution and requirements will be determined; connectivity corridors location and CWD requirements will be determined; structural stage model will be completed; PEM will completed; comprehensive Landscape Unit plans will be completed; and TRP guidelines will be implemented. The LUP will integrate the knowledge in one comprehensive plan, and the TRP guidelines will guide landscape level management efforts for the licensees. LUP success indicators and monitoring procedures will be developed at a later date.	LRMP, IWMS, LUP, TSR	LUP key ministry initiative	Ki2-H06, Ki2-H07, Ki2-H09, Ki2-H14
Ki3-H3	MoF MELP	3.11,3.12	Inability to evaluate impacts of development on water quality. Success in meeting the water quality objectives of the LRMP is unknown.	Three main strategies will allow the implementation of the LRMP objectives and the assessment of development on water quality: 1. Development of cost effective tools to assess water quality. Specific projects include complete calibration of the index of biological integrity for the Kispiox 2. Implement water quality assessment tools. Implement and monitor biologic integrity assessment. 3. Assess level of sediment delivery of forest roads. This strategy will be met by mapping	Data on water quality will allow the assessment of development impacts on water quality and will allow the development of adaptive strategies to meet the LRMP objectives. Conservation of soil and water resource is a specific criterion of SFM (CCFM) and the projects listed here will give decision-makers knowledge needed to ensure the maintenance of the living substrate for forest lands.	The success of the strategies in strengthening SFM decisions is intimately linked with the calibration of the biological integrity index, and of the implementation and monitoring of the index. Mapping and monitoring of unnatural sediment delivery sources for the Kispiox River watershed is another target and indicator of success in implementing the strategies. The mapping and monitoring will lead to the implementation of adaptive management	LRMP, LUP	Kispiox, PR Region	Ki3-H04

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
				sediment sources for unnatural sources		concepts, which are crucial in SFM.			
Ki4-H4	MoF	1.32, 1.21	Inability to assess current state of forest cover attributes due to lack of updated air photos. The most current air photos available for the Kispiox Forest District were taken in 1992. The photos are used as a basis for many mapping and inventory projects (e.g. OGMA, FEN, WTP, and seral and structural stages) needed for LRMP implementation and LUP process. Natural changes in species composition and stand structure must be captured when doing the above projects and 8 years old photos are not suitable for this task.	The strategy to solve this issue simply involves the collection of new air photos. This should be done on a five years cycle, and the photos should be taken at a scale of 1:15,000, digitally scanned and triangulated. These photos would help meet SSFM objectives and would be detailed enough to meet most operational requirements.	New air photos will allow capturing changes in the forest cover attributes that are not captured through the update process or growth and yield models. They will also allow the complete and accurate depiction of the forest at one specific moment in time. This "snapshot" is needed as input to models (wildlife, PEM) and determination of OGMAs, WTPs, and FEN. These projects are in turn an integral part of the biodiversity consrvation objectives stated in the LRMP and by CCFM.	New air photos for the entire district should be acquired in 2001 or 2002 at the latest.	LRMP, LUP	Region	Ki4-H08
Ki 5-H5	MoF, MELP, SCI	1.23	Inability to assess impacts of timber harvesting on riparian habitat, particularly around S4, S5, and S6 streams. There may potentially be unnecessary constraints in timber access and supply due to uncertainties related to stream classification and riparian habitat requirements. Riparian habitats are small, but critical habitat types. The Forest Practices Code outlines mngt practices within riparian habitats. However, there is uncertainty as to whether these practices adequately protect & conserve non-timber resources associated with streams. This has potential impacts on timber supply, delivered wood costs, landscape unit obj. and LRMP strat. implementation.	The following knowledge is needed to address the issue: -Accurate 1:20,000 stream classification: -Quantitative comparison of managed stand types and natural stand types in riparian management zone; -Quantification of the effects of a range of timber harvesting prescriptions, and guidelines for stream crossing. Also requires monitoring; -Quantification of riparian stand attributes associated with habitat use by semi-aquatic mammals and amphibians.	This knowledge will be used to develop and implement landscape level objectives and operational guidelines for the protection and conservation of riparian habitat. These will lead to improvements in meeting LRMP riparian areas objectives and strategies, in the conservation of fish and fish habitat values, and in meeting the SFM biodiversity and soil and water criteria.	Specific targets include the completion of the identified projects. One performance indicator consist in the number of kilometres of stream sampled or classified. Other adaptive management strategies and monitoring tools and methodologies will be developed as part of the listed projects.	LUP, LRMP, TSR	Region	KI5-H01

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki6-H6	MoF, SCI, MELP	1.21, 2.21	Inability to assess impacts of timber harvesting activities on fish and wildlife population and fish and wildlife habitat. Currently unable to implement LRMP strategies and evaluate success in meeting LRMP objectives for fish and wildlife habitat and population. This leads to uncertainties in management decisions that may have effect on effective habitat and population, and delivered wood costs.	Three main strategies will allow knowledge gain that will be used to assist with LRMP implementation and monitoring and thus, improvement in strategic decision making. 1. Assess wildlife habitat at landscape level. This will be realized through: • Field verification of wildlife habitat suitability mapping(MoF/MELP/SCI) for goat, moose, deer, and grizzly bear; • Wildlife habitat suitability mapping for marten and fisher with field verification. 2. Assess fish and wildlife habitat at the stand level. Specific projects include: • Northern Goshawk nest inventory with quantification of response to timber development (SCI); • goat telemetry project (MELP); • bull trout studies (MELP). 3. Assess impact of timber harvesting activities on wildlife population. Specific projects include: • monitoring and evaluation of the goshawk management plan (SCI); • habitat supply model (MoF/MELP).	A better knowledge of areas providing suitable habitat attributes for wildlife and of the spatio-temporal use of forested areas by wildlife will lead to the development of management strategies that will focus on habitat diversity and habitat preservation. It will also lead to more certainties and confidence to stakeholders. This knowledge will be provided by the model, the goshawk nest inventory with quantification of post fledging areas, the goat telemetry project and the bull trout habitat inventory. These strategies, which are critical in implementing the LRMP and developing LUP, will be monitored through the habitat supply model and the goshawk management plan monitoring project to assess their success in meeting SFM objectives.	A habitat model will be developed for goat, grizzly bear, moose, and mule deer. The resulting maps and database, together with the information from the bull trout, goat, and goshawk inventory projects, will form the basis for developing and implementing landscape level management strategies for these resources. A habitat supply model will be developed for goat, grizzly bear, moose, and mule deer (LRMP species). This model will be used to evaluate the impacts of harvesting practices on wildlife habitat. A goshawk management plan is in development and its monitoring will allow the implementation of adaptive management techniques concepts.	LRMP, IWMS, LUP, TSR	Provincial	Ki6-H02, , Ki6-H03, Ki6-H010

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki7-M1	MoF	2.18 (1.32, 2.19, 5.42)	Botanical forest products are not integrated in forest management decision-making processes. LRMP objectives are not met and the botanical forest products strategies cannot yet be implemented. Moreover, the MoF mandate of managing all forest resources is not met. This creates conflicts with other resource uses, the potential of damaging/losing botanical resources, and of missing revenue and employment opportunities.	The following strategies will allow the integration of botanical forest products in forest management decisions and LUP, and the implementation of the LRMP: 1. Gain understanding of botanical forest product ecology. Specifically: • Suitability mapping for pine mushroom, berries, and medicinal plants • Autocology assessment of key species 2. Analyze socio-economic aspects of botanical forest products. This will be done through: • Socio-economic analysis of pine mushroom	Knowing the ecology and autocology of botanical forest products and their socio-economic benefits will allow the development of management strategies and objectives, the implementation of key LRMP objectives, and the development of LUP. As these plans integrate environmental, social, and economic values that are key in improving SFM efforts.	Specific targets that will allow evaluating the success of the strategies include the completion of pine mushroom habitat suitability mapping, the completion of pine mushroom autocology studies, and the completion of a socio-economic analysis. Indicators and monitoring procedures will be determined later.	LRMP, TSR, LUP, FN	Kispiox, Kalum	Ki7-H12
Ki8 - M2	MoF	2.13	Field reports suggest that tomentosus root disease is frequent in mature and immature stands. Volume losses and mortality associated with the disease are not captured in AAC calculations because they are unknown. This also has serious impact on fibre flow and delivered wood costs.			A report on this issue will be completed in 2000 to be incorporated into TSR	TSR, LUP	Kispiox	
Ki9-M3	MoF	5.13, 5.41, 6.x1	Inability to meet public needs for recreation sites in under-developed portions of the district, to meet management plan established under the Heritage Conservation Act, and to establish a long-term vision for recreation. The Kispiox LRMP has many specific recreation objectives and strategies affected by this issue. Specifically, the Forest Recreation Strategy is now three years overdue, and public expectations are not met. The Yukon Telegraph Trail Management Plan has been established under the Heritage Conservation Act, but the plan can not be	The following projects will allow to address the recreation issue: • Locate Yukon Telegraph Trail; • Prepare strategic recreation plan.	The knowledge that will be gained through the Forest Recreation Strategy and the location of the Yukon Telegraph Trail will be used to meet key LRMP objectives and strategies and the Multiple Benefits to Society criterion of Sustainable Forest Management (CCFM).	Specific targets include preparing a Forest Recreation Strategy, and locating the Yukon Telegraph Trail. Indicators of success in meeting LRMP strategies and objectives will be determined later.	LRMP, LUP	Kispiox	Ki9-H11, Ki9-H13

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
			implemented without first knowing the exact location of the trail.						
Ki10 - M4	MELP	1.32, 1.21, 2.21	Inability to assess impacts of timber harvesting on rare ecosystems. As per LRMP objectives, rare ecosystems and plant communities must be maintained. The inability to know where these resources are located may lead to adverse harvesting impacts that could result in the harvest of red/blue listed species or ecosystems	Rare ecosystems will be identified and management strategies will be developed. Specific projects include: • Rare ecosystem inventory; • Evaluation of the success of the rare ecosystem DOP	The impact of harvesting activities can not be assessed without knowledge related to the type and location of rare ecosystems and plant communities. Similarly, the effectiveness of the local DOP at maintaining rare plants and ecosystems must be evaluated to assess the impact of harvesting activities. This knowledge will allow decision-makers to ensure rare ecosystems and plant communities are maintained. It will also allow the monitoring of ecosystem and population level changes, which is a recognized indicator of SFM.	The success of the strategy depends on the completion of a rare ecosystem inventory. It is also dependent on the application of the rare ecosystem DOP and of the monitoring of its success at identifying and maintaining rare plants and ecosystems.	LRMP, LUP	Kispiox	
Ki11-M5	MoF	2.13	Needle blight occurrence seems to be increasing in pine plantation. Needle cast normally only slows tree growth. However some mortality might be occurring due to secondary pathogen infestation. Set back in tree growth (AAC and delivered wood costs implications) can also be expected.			A report on this issue will be ready in 2000 to be incorporated in TSR	TSR	Kispiox	
Ki12-L1	MoF	2.11	Recent inventory audits and local observations suggest that site index estimates for regenerated stands are underestimated. Errors in site index estimates would result in inaccuracies in growth rate and volume estimates of regenerated stands. This would have significant impact on the long term AAC level, and potentially, on delivered wood	Productivity assessments will allow the determination of accurate site index estimates for regenerated stands. Specifically: • See regional issue 2.11 and 2.12	Better site index estimates will result in better volume and growth rate estimates, which will increase the certainty around future AAC levels.	See regional strategy for issue 2.11 and 2.12 Chief forester AAC implementation direction	TSR	Provincial	Ki12-Re?

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
			costs.						
Ki13 - L2	MoF	2.13, 2.19	Risk of losing grazing habitat due to presence of noxious weeds. Protecting and conserving range resources and controlling noxious weeds is part of the LRMP. Loss of grazing habitat would result in a reduction in carrying capacity of crown range, loss of revenue and community stability.	In order to maintain grazing habitat and controlling noxious weeds, the following strategies will be implemented: 1. Assess extent and distribution of noxious weeds. Specifically: - Conduct a noxious weed inventory 2. Implement noxious weeds control measures. These include: - Management regime development - Manual &chemical control measures 3. Assess extent and distribution of range ecosystems. Specifically: - Conduct range ecosystem inventory	Knowing the extent and distribution of noxious weeds and range ecosystem will allow to reduce the risk of losing grazing habitat because it will lead to the development of noxious weed control measures and better range management. This will in turn allow meeting the LRMP objectives for range. The LRMP integrates environmental, social, and economic values that are key in improving SFM efforts.	Specific targets include completing a noxious weed inventory, developing and implementing noxious weeds control measures, and completing a range ecosystem inventory. Performance indicators and monitoring measures will be determined later.	LRMP, LUP	Kispiox	
Ki14- L3	MoF	2.13	Recent aerial surveys indicate an increase in balsam bark beetle distribution and mortality. Trees attacked by the beetle are not currently being actively targeted for salvage and volume losses are not captured in AAC calculations because they are unknown. This also has serious impact on fibre flow and delivered wood costs.	Monitoring of bark beetle mortality must continue . Strategies to capture salvage mortality and capture volume losses must be incorporated in TSRs	Better AAC determinations of mortality and loss	Continued FH monitoring through overview flights and detailed forest health monitoring. Incorporation of FH data into TSR	TSR, LUP	Kispiox	

KISPIOX Forest District

ISSUES AFFECTING SUSTAINABILITY OF FOREST MANAGEMENT

Priority and Issue #	Proponent	Regional Issue #	Significance of Issue	Knowledge Building Requirements	Anticipated Benefits	Targets and Performance Indicators	Origin of Issue	Scope	Projects
Ki15-1.4	MoF	2.11	OAF values used for projecting growth of regenerated stands may not be appropriate for backlog stands. Incorrect OAF estimates would result in inaccuracies in growth rate and volume estimates of regenerated stands. This would have significant impact on the long-term AAC level and delivered wood costs.	An OAF study would permit to determine what value should be used in regenerated stands growth models and adjust the default value currently used, if needed. • OAF assessment in backlog stands	Better OAF estimates will result in better volume and growth rate estimates, which will increase the certainty around future AAC levels.	OAF study to be completed and results incorporated in next TSR process (as requested by the chief forester).	TSR	Kispiox	

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Determination and ranking of priority key watersheds will be tied directly to RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final RMP's will be the source document for the determination of watersheds to be targeted for completion using FRBC investments. The highest priorities and best opportunity for restoration success identified will be selected for investment.

C. STRENGTHEN SUSTAINABLE FOREST MANAGEMENT

1. Geographic Units

Regional priority issues identified by a regional planning team, with input from the districts on local priority issues, strategies and project recommendations. Knowledge strategies developed in regional framework at management unit level. Management units for this component are Forest Districts. Cassiar will be treated as a separate management unit from Bulkley.

2. Roles and Responsibilities

a. Lead:

MoF and MELP will assume a joint lead role in development of RMP. RMP Steering Committee is composed of Greg Rawling (MoF), Troy Larden (MELP) and Butch Morningstar (FRBC). Contacts for the SSFM component are: Ruth Edwards (MoF), Don Reid (MELP) and Paul Perkins (FRBC). A contract facilitator will be hired to co-ordinate the activities of the Regional Strategic and Regional Planning Teams. A contract facilitator will also be hired to co-ordinate input of the District Planning Committees. Level of contribution to and award of the contract to be determined by the RMP Steering Committee.

b. Regional Planning Teams

- The regional planning teams will consist of 1)a Regional Strategic Team composed of senior members of MoF (RM, FSIM), MELP (RD, FRP Coordinator); FRBC (RD); LUCO (IAMC co-ordinator) and two industry representatives and 2) a Regional Planning team composed of technical experts from MoF, MELP and industry.
- The RMP Steering Committee will reconvene and assemble the Regional Strategic and Planning Teams. Recommended first meeting of the Regional Planning team is May 3, 2001.
-
- Regional Strategic Team will:
  - provide regional vision and strategic direction
  - reconfirm key regional strategic issues
  - The Regional Strategic Team will provide direction as necessary and review final RMP documents
- The Regional Planning Team will:
  - Provide technical direction and framework for the RMP;
  - Ensure framework is provided per steps 2-5 of section 4.1a. (RMP content);
  - Provide advice and guidance to the RST where needed;
  - Assist district planning teams in completing knowledge strategies

- Provide direction for facilitator to compile draft and final RMPs

c. Participation and Attendance:

- Ministries leading the process will request participation of stakeholders with timelines appropriate to the reasonable completion of the RMP's.
- Industry representatives are encouraged to participate at the RST and RPT levels, however, it is expected that most participation will be at the district or management unit level.
- Participants must provide input in a timely fashion where provided with reasonable opportunity to participate in the process.
- The Ministries will document both the level of participation and opportunities provided to stakeholders, and include this documentation in the progress report (per attached Matrix) and final RMP.

Consultation

- See also lead roles
- The Ministry of Forests Districts will make recommendations for the establishment of local planning teams;
- Local planning teams will consist of those stakeholders with available technical expertise to contribute to construction of the RMP. Generally, the teams will be similar to previous years but also include as a minimum:
  - Forest Ecosystem Specialists (MELP - all districts)
  - The Wetsuete'en (Lakes, Morice, Bulkley)
  - IFPA (Lakes, Morice)
  - Lakes Community Forest (Lakes)
  - Kitsumkalum (Kalum)
  - Nisga'a (Kalum)
- Participants in RMP process will provide technical information consistent with the RMP guidelines. **The RMP process is not a forum for input of values of a social or investment-planning nature.**

e. Feedback:

- The draft RMP will be fed back to the participants (**by June 30th)**
- Participants to respond back with final comments (**by July 31st)**
- Subject to further discussion and agreement between the agencies, the RMP will be presented for information purposes to a broader group of stakeholders in September, 2001.

f. **Consultation Reports:**

- Matrix to track participation and responses (attached)
- The agencies will provide a report on consultation and meetings including as a minimum, when meetings/consultations were held, the subject matter of the meeting/consultation, who attended, who declined to attend, the date and time of the meeting/consultation. The matrix noted above may be used or another, mutually acceptable format may be substituted.

3. Forest Renewal BC Input

- **Performance Targets:** Will be at a Regional level
- **Investment Level Estimates:** Will be at a Planning Unit level
- **Participation in process:** Will commit to having a person available in an advisory role

4. Process for RMP Development

4.1 RMP Content

a. **Per Guidelines**

- The guidelines (March 2001) will outline the required content of the RMP, including tables.
- Opportunities within the strategies to be identified jointly by participants at a management unit (district) level, within the regional framework (see below steps);
- Objectives and opportunities to be ranked (prioritised) where possible
- The following steps are the agreed upon process for identifying investment strategies and knowledge gaps recommended to FRBC for funding. These steps will identify integrated projects and opportunities to address key priority issues in a regional framework, with local significance;

1) The RMP steering committee will reconvene the Regional Planning Team and the Regional Strategic Team and hire a facilitator to co-ordinate the progress of the SSFM section of the RMP;
2) RPT and RST to confirm or adjust regional priority issues
3) RPT to synthesize the functional relationships within issues;
4) Redefine the knowledge strategies for regional priority issues so that gaps may be identified and filled in a logical sequence (per the functional relationships), use existing management unit projects and add others as necessary. RPT
5) Facilitator and RPT reps to work with district planning teams for local understanding of strategic approaches (step 4) to knowledge strategies. Districts need to understand and buy into functional relationship approach

to priority issues strategies and define and recommend management unit (district) strategies for investment. These strategies should fit within current budget levels and must integrate with regional knowledge strategies at the management unit level. Within this framework, projects would be prioritized within the strategies for the defined term of the RMP.

6) District planning teams must provide rationale for any off strategy (step 5) investment recommendations. These rationale must demonstrate how proposed deviations meet an integrated district or regional SFM plan.

b. **Research**

- Significant issues requiring further study are to be identified for referred to the research process.
- Issues will be identified as operational or strategic in nature.
- Strategic issues should be defined in context and forwarded to the research process as soon as possible.

c. **Outcomes and Performance Measures**

- If required, will be agreed upon by the RMP steering committee in consultation with the Regional Strategic Team

4.2 RMP Format

- As per guidelines (currently available)
- A contractor will be hired by MoF to assemble the RMP in the required, consistent format.

5. Conflict Resolution (around determination of priorities)

a. Preventative measures preferred over reactionary

- Ground rules established by participants prior to plan establishment
- Substantive agreement desired on objectives and strategies
- Priorities must fit with established objectives and strategies
- RMP guidelines provide direction for development of objectives, strategies and priorities

b. Where conflict arises that cannot be resolved locally, the issue will be noted in the RMP as multiple options (for professional differences of resource opinion) or referred to the Regional Steering Committee for resolution and direction.

6. General

a. Ranking of priorities and opportunities will be tied directly to objectives and strategies plan. Main stakeholders develop objectives and strategies using RMP guidelines and Forest Renewal BC's Strategic Objectives.

b. Each RMP will have a discussion of objectives and strategies.

c. General rule is to proceed to objectives with best efforts and using best information available. Where complete information is not available, or optimal solution is not available, make best decisions possible. If necessary, adjustments may be made later when better information or resources are available.

7. Role of RMP in Forest Renewal BC's Investment Plan

The final RMP's will be THE Source Document for FRBC investments. The highest priorities and value opportunities identified will be selected for investment.